



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 1 — CHART INFORMATION

SECTOR 1

KOREA — SOUTH COAST

Plan.—This sector describes the S coast of Korea from Haenam Gak, the S tip of the Korean peninsula, to Pusan Hang. It also includes Cheju Do in the W entrance of Korea Strait or Joseon Haehyeob (known as Tsushima Kaikyo to the Japanese). The general descriptive sequence is from W to E.

General Remarks

1.1 The S coast of Korea, from **Haenam Gag** (34°18'N., 126°31'E.), its SW extremity, to the vicinity of Pusan Hang 135 miles ENE, is indented by large peninsula projections, and is fronted by numerous groups of islands, islets and rocks. Generally speaking, the islands and islets are steep-to, and there are few below-water dangers.

Buoyage.—The conversion to IALA Maritime Buoyage System (Region B) in the Republic of Korea was reported completed.

Mined areas.—Extensive mine laying operation took place in Korean waters during the 1950-53 war. [For further details, refer to Pub. 120, Sailing Directions \(Planning Guide\) Pacific Ocean and Southeast Asia.](#)

Fishing industries.—The increasing number of fishing industries and their operations are developing in the offshore areas and around the coasts of Korea. These operations are performed throughout the year. Aquaculture farms, fish havens, fixed net fishing, and squid fishing operations may be established in positions where they constitute a hazard to navigation.

Fixed net fishing are set within 2 miles offshore in many places off the coasts of Korea; however, the distance may be extended up to 5 miles offshore. Newly established fixed nets are considered hazardous to navigation, and they are either published in the weekly Notices to Mariners in the Republic of Korea or an announcement is made through the Radio Navigation Warnings system.

Generally squid fishing operation is carried out throughout the year in the Sea of Japan, by boats up to 100 tons. Lights from these boats may be shown to attract the fish and not necessarily in conformity with the lights specified in 72 COLREGS.

Fish havens may be encountered on the surface, on the sea bed, or suspended below the surface, at distances within 5 miles of the coast. Those on the sea bed may consist of concrete blocks, scrap metal (including junked vehicles), or sunken hulks laid in a fixed position to develop a fish habitat and a marine environment in coastal waters. Those on the surface may consist of floating rafts under which fish are encouraged to feed out of the sunlight.

These contraptions are also known as fish aggregating devices (FADS). Concentration of fishing vessels may be expected in the vicinity of fish havens where conventional methods are used to catching fish. Occasionally fish havens may be marked by lights or special lighted buoys.

Caution should be exercised if it becomes necessary to pass over a fish haven or when anchoring near it.

Marine farms consist of rectangular cages made of thick wire mesh in two layers, having a standard measure of 20 by 30m. Fish are bred, fed, and harvested in these cages. Marine farms are encountered either in deep water or in an area close inshore, and may be marked by lights or (special) lighted buoys.

The deep water marine farms may be positioned as far as 30 miles offshore, and they are usually attended by service vessels. Although they are moored in a temporary position on the surface, there are also others suspended 20 to 25m below the surface. These farms are frequently moved to safe water before the onset of winter. Inshore marine farms are more likely situated in permanent positions and they are shown on the appropriate charts.

Winds—Weather.—In the Korea Strait the winds are predominantly NE during the winter, but are not felt strongly W of Maemul To. During this season very light breezes blow from between NW and NE between Maemul To and Tumi Do.

On the S side of Namhae Do, W winds blow regularly during this season, and between this island and Kuma Yolto the prevailing winds are W. Between Kuma Yolto and Naro Yolto there are gales from between NW and WSW. Although these gales usually blow strongly during the night, they tend to moderate toward dawn.

At Chuja Kundo the prevailing winds during the spring are E, during the summer E and S, during the autumn N, and during the winter W and NW. The strongest winds are E, and bad weather with these winds often last for a period of 10 days.

Tides—Currents.—Along the S coast of Korea from the S end of Naro Yeoldo to the S end of Koje Do, the tidal currents are very weak. To the S of this area, between the islands off this part of the coast the tidal currents set W with the rising tide E with the falling tide, attaining a velocity between 1 to 1.5 knots. In the narrow channels between Koje Do and Busan the tidal currents attain velocities between 3 to 4 knots.

The tidal currents N and S of Soan Kundo set E and W, with the change occurring about 2 hours after HW and LW. At spring tides there is a brief period of slack water.

Off the S end of Soan Do the W currents divide into two branches, one setting into Soan Hang and the other flowing past both sides of Chagea Do, past the S end of Pogil To and then setting NW. The ebb current sets in the opposite direction. The maximum velocity is 4.5 knots.

In Chuja Kundo the tidal currents usually set in a W or E direction. The velocity of the tidal currents at springs is about 2.3 knots, but in the narrow channels between the islands and islets they attain a velocity of 5 knots in some places, producing dangerous overfalls.

During the ebb tide, eddies are experienced among the islets SE and S of Heonggan Do, and tide rips are common.

The W current flows from about 2 hours before HW until 4 hours after HW at Chang Jiang. The E current flows from

about 4 hours after HW until about 2 hours before the following HW.

1.2 Cheju Do (Jeju Do) (33°25'N., 126°30'E.), a large and rugged island, lies about 45 miles S of the S tip of the Korean peninsula. The volcanic island has few indentations, and no secure anchorages for large vessels. Halla San, the highest point on the island, has two peaks, the W of which is a precipitous wall of rock, and the E is slightly sloping. The lower slopes of the mountain are wooded.

From NE of Haryur Ag, about 12 miles NE of Halla San, is the N of two sharp peaks, about 1 mile apart, which are useful to vessels approaching from this direction. Also very conspicuous from this same direction is a sharp-peaked mountain, thickly wooded, about 3 miles NW of Halla San. The most conspicuous feature on the SW coast of the island is Sanbang San. This dome-shaped mountain rises precipitously from the coast about 13 miles SW of Halla San.

Tides—Currents.—Off the S coast of Cheju Do the tidal current sets in an E and W direction, roughly parallel to the coast, at a velocity of 0.5 to 0.75 knot. The W current runs from 3 to 4 hours before until 2 to 3 hours after the time of HW. The E current flows from 2 to 3 hours after HW until from 3 to 4 hours before the time of the following HW.

Off the SW coast of Cheju Do the velocity of the tidal currents is strongest in the vicinity of **Mara Do** (33°07'N., 126°16'E.), where it attains about 3 knots. The passage N of Mara Do has strong tidal currents which generally cause a tidal race.

Tidal currents off the N coast of Cheju Do set parallel to the coast. In the vicinity of **Piyang Do** (Biyang Do) (33°24'N., 126°14'E.) the velocity of the tidal currents is about 2.5 knots.

Chagwi Do (33°19'N., 126°09'E.), lying close off the W extremity of Cheju Do, is a cliffy island covered with grass. A conspicuous rocky peak rises about 1 mile ESE of Chagwi Do.

Cheju Do—South and East Coasts

1.3 Hwasun Hang (33°14'N., 126°28'E.) is a fishing harbor protected by two breakwaters. The L-shaped S breakwater is 230m long, and extends S then W from the coast. The N breakwater has a landing quay for small craft and extends 250m WSW.

Hyeongjedo Moyji (33°13'N., 126°20'E.) is the roadstead SW of Hwasun and partially protected from the S by **Hyeong Do** (33°12'N., 126°19'E.), a small island, 25m high, lies 1.3 miles NE of Bunam Gag. A detached rock, 47m high, lies close S of Hyeongje Do. Foul ground lies between Hyeonggi Do and the coast NW.

Anchorage.—The best anchorage may be obtained, in a depth of 22m, sand bottom, about 1 mile offshore and midway between Hwasun Hang and Hyeongjedo. This anchorage is exposed to S and E winds which quickly raise a heavy sea.

Good marks in addition to Sanbang San include Gun San, about 5 miles NE of Bunam Got, and which may be identified by two large rocks on summit. A pier extends 183m W from a point 2 miles NE of Hyeongjedo. Hyeongjedo lies about 1.3 miles NE of the SE extremity of Bunam Got. Foul ground extends about 183m E from this islet, and there is a rock 45m

high, close S of the islet; between the N extremity of the islet and the mainland NNW, there are reefs and shallow water.

Seogwip'o Hang (33°14'N., 126°34'E.), a fishing harbor, lies at the mouth of Yenoe Chon. A breakwater extends about 0.25 mile SE then 183m protecting the E side of the approach channel to the harbor. A light is shown from the breakwater head on the E side of the harbor entrance.

Seogwi Ri is the principal town on the S coast of Cheju Do. It stands on a hill on the E side of the harbor. Nok Som and Sam Do lie in the approach to Seogwi Ri; the former, S of the town, has steep sides and a flat summit, the latter, SE of the town, has a sharp peak conspicuous from E or W. A prominent waterfall, located at the mouth of a river close E of Seogwi Ri, is a good landmark for vessels approaching the harbor from seaward between Nok Som and Sam Do. It is 26m high and looks like a white pillar from a distance.

Anchorage.—Large vessels can obtain temporary anchorage off the small harbor at Seogwi Ri, but it is open to the S.

1.4 Seongsan Bando (33°28'N., 126°56'E.) is the peninsula which forms the E extremity of Cheju Do and to which it is joined by a 50m wide and sandy isthmus. The NW part of the peninsula is low, flat and cultivated, but at the SE end, an extinct volcano rises sharply to a remarkable dish-shaped summit, 178m high. The rocks around the crater, the sides of which are almost perpendicular, are lower to the NE and higher to the NW, and have a conspicuous serrated outline providing a good landmark from some distance.

Aspect.—In addition to the volcano at the SE end of Seongsan Bando, there is Seongsan Am, an isolated rock lying close offshore NE of Seongsan Du; it is pointed, 22m high and prominent when seen from the N.

Four radio towers, each 65m high, are situated in the central NW part of Seongsan Bando.

The port of Ojolip'o is located on the NW side of the Seongsan Bando isthmus, on the S side is the port of Songsanp'o. These two ports are collectively known as Songsanp'o Hang, an important fisheries base.

Seongsan Du, the SE extremity of Seongsan Bando, is distinctive, projecting from the SE side of the peninsula and rising steeply to a sharp pointed summit 72m high.

Songsanp'o Hang East Breakwater Light (33°28.4'N., 126°56.3'E.) is shown from a framework tower standing at the end of a breakwater extending 660m from the end of Seongsan Bando, and runs NNE then N.

The N breakwater extends W from a position about 180m W of the head of the E breakwater. Lights are shown from round towers at each end of the breakwater.

Ojolip'o is protected by two breakwaters; the E breakwater, L-shaped and about 380m long, extends NW then WNW from Seongsan Bando; the W breakwater extends 524m NE from the mainland.

Small vessels up to 300 tons can berth alongside in depths of between 2 to 4m; the total quay length is 500m.

A submarine pipeline crosses the harbor 0.3 mile S of the breakwaters.

Songsanp'o lies on the SE side of the Seongsan Bando isthmus.

Anchorage.—Good anchorage may be obtained in the N part of Songsanp'o, about 0.7 mile WSW of Seongsan Du, in

depths of 10 to 15m sand; the S part of the bay is rocky. This anchorage, which is a fishing station, is protected from NW winds in winter but is exposed to SE winds in summer.

Cheju Do—North Coast

1.5 The nearly straight N coast between Piyangdo Myoji and Udo Sudo consist mostly of black lava rocks, piled up in heaps, and projecting rocky ledges. Cheju (Jeju), about midway along this coast, is the principal town on the island. To the E of Cheju the hills rise steeply inland and are broken by narrow valleys.

Piyang Do (Biyang Do)(33°25'N., 126°15'E.) affords anchorage, in about 13 to 15m, sand, between the E side of the island of Piyangdo and Cheju Do. Anchorage may also be had SW of Piyangdo, in 13 to 31m, sand and shells. Local knowledge is necessary for both anchorages. Small local vessels can anchor either 0.3 mile S of Piyangdo, in 10 to 11m, sand, or in a bay on the SE side of the island in depths of 2 to 3m; the latter is a good anchorage except in S winds. The bottom is rocky and uneven in the vicinity of these anchorages, and vessels may experience difficulty in weighing anchor. A light is exhibited on Piyangdo. A submarine pipeline has been laid SE from Piyangdo.

Hanrim Hang (33°25'N., 126°16'E.), a fishing harbor, is entered about 1.3 miles E of Piyangdo. The harbor is protected to the N and W by a breakwater which, connecting with Chiku Do on the N side, extends over 1,500m W and SW; another breakwater projects 180m from the shore to form an inner harbor basin. Breakwater extension works were in progress.

Aewol Got (Aeweol Got), the NW extremity of Cheju Do (Jeju Do), lies 3.5 miles NE of Hanrim Hang. A prominent hill 172m high, with an old beacon on its summit, lies 1.5 miles ESE of the point.

Aewol Hang (33°28'N., 126°20'E.), 1 mile E of Aewol Got, is a small fishing harbor protected by a breakwater with the entrance open NE.

Aewol Li (Aeweol Li) and another fishing village lie a short distance E of the harbor.

Cheju Hang (Jeju Hang) (33°31'N., 126°32'E.) is being developed to international port standards for vessels up to 10,000 tons. The harbor is protected on its W and NW sides by a breakwater 0.5 mile long, on the inside of which a breakwater spur forms the N side of the harbor entrance. The harbor is open to the NE. A mole projects 183m NW from the shore to form the S entrance point of the harbor.

1.6 Cheju (Jeju) (33°31'N., 126°32'E.) ([World Port Index No. 60350](#)), the administrative center of the island, stands on the shore at the head of a small basin protected by a breakwater on its NW side and a breakwater on its E side. The inner harbor SE of the NW breakwater provides shelter and berthing for small vessels with drafts of less than 4.6m. The inner harbor side of the E breakwater provides shelter and berthing for large commercial cargo vessels with an average draft of 7.3m. Dredging is done as needed to maintain these depths. Extensive reclamation and construction works are in progress in the harbor, with the aim of accommodating vessels of 20,000 dwt by 1996.

Winds—Weather.—Strong NW winds are frequent in the winter months and often make it impossible to work cargo. Gales are most frequent in January.

Aspect.—In the vicinity of Cheju are several conspicuous peaks. To the W of the city is a prominent pine wood, and to the S is a group of pine trees.

Pilotage.—Pilotage is not compulsory, but is available. The pilot boards in approximate position 33° 31.8'N, 126° 32.7'E.

Anchorage.—No deep-draft anchorages have been designated at Cheju Port because the harbor basin beyond the breakwater opens directly to the East China Sea.

1.7 U Do (33°30'N., 126°58'E.), close off the E end of Cheju Do (Jeju Do), is separated from it by a passage with a general width of about 1 mile, and depths of 13 to 28m in the fairway. The tidal currents set through this passage in a NNW and SSE direction, attaining a maximum velocity of 3 knots.

Anchorage may be obtained 0.5 mile SW of the SW extremity of U Do, in depths of 15 to 22m, sand and shells.

Cheju Haehyob (Jeju Haehyeob) (33°50'N., 126°40'E.), lying between the N side of Cheju Do and Chuja Gundo and the islands E, is deep and unobstructed, except in its SW part.

Haeam Yeo (33°40'N., 126°18'E.), about 12 miles off the NW coast of Cheju Do, is steep-to and pointed. A depth of 4m lies close E of Haeam Yeo. Hwa Do, about 4.5 miles NE of Haeam Yeo, has a flat summit which can be easily identified.

Nakano Se, about 4.5 miles NNW of Hwa Do, is relatively steep-to.

Changsu Do(Jangsu Do) (33°55'N., 126°39'E.), about 22 miles N of Cheju Do (Jeju Do), has a wooded, flat summit and steep cliffs.

Yeoseo Do (33°59'N., 126°56'E.), about 14 miles ENE of Changsu Do, is very conspicuous. When seen from W it appears as a round hill with a long ridge extending NE, but from E it appears flat and resembles the back of an ox. A light is exhibited on the N side of the island.

Small local vessels obtain temporary anchorage, in a depth of 9m, in a shallow bay on the N side of Yeoseo Do, but care must be taken to avoid a rock awash lying on the E side of the entrance.

1.8 Chuja Kundo (Chuja Gundo)(33°57'N., 126°20'E.) is a group of islands, islets, and rocks lying about 25 to 30 miles N of Cheju Do (Jeju Do). Vessels should avoid passing through this group. **Jeolmyeong Seo** (33°52'N., 126°19'E.), considered to be the southernmost of the group, is a conical shaped rock lying 9 miles NNW of Hwa Do. Heavy tide rips are reported within 1 mile of Jeolmyeong Seo. Sudeog Do, 2.75 miles NE of Jeolmyeong Seo, is prominent as its N side is a precipitous cliff 126m high.

Bang Seo (33°55'N., 126°24'E.), the SE islet of the group, lies about 3 miles ENE of Sudeog Do.

Heonggan Do, the N of the group, lies about 8.5 miles NNE of Jeolmyeong Seo, and has two peaks. A light is exhibited on Heonggan Do.

Sangchuja Hang, on the NE side of Sangchuja Do, is a small harbor with depths of 3.7m. Winds from the N and E cause a swell in the harbor, but it is comparatively calm close offshore.

Hachuja Do (33°57'N., 126°20'E.), the largest and highest island of Chuja Gundo, 163m high, is connected to Sangchuja

Do close NW, by a bridge with an overhead clearance of 9m. Foul ground extends 0.75 mile S and SE of the S point of Hachuja Do. A 10m wide breakwater extends 0.3 mile SSW from a position on the shore SE of the summit of the island.

Anchorage may be obtained SE of the summit of Hachuja Do, in depths of 18 to 20m, sand.

The islet of Jiggu Do lies about 2 miles NW of Sangchuja Do.

Abnormal magnetic variation was reported to exist about 10 miles NNW of Chuja Gundo.

1.9 Soan Kundo (Soan Gundo) (34°10'N., 126°27'E.), NE of Chuja Gundo, is separated from the Korean mainland by Hoenggan Sudo. The group consists of three large islands, several smaller islands, and numerous rocks.

Judun Cho (Chulon Cho), a rocky head awash, lies about 3.75 miles SW of Jagae Do. The sea breaks over this rock during strong winds and tidal currents.

Jagae Do, the southernmost of the group, rises to a sharp peak at its S end. This wooden islet is an excellent landmark for vessels passing S of the group. A light is shown from the SE extremity of Jagae Do.

Soan Do, the E island of the group, consists of two highlands joined by a low narrow isthmus. The E end of the N part of the island is surmounted by a conspicuous conical peak. Soan Hang is formed by a narrow passage between Soan Do and the islands W of it. An overhead power cable, with a clearance of 31m, extends from the W extremity of Soan Do to the island W of it. Nohwa Do, the N island, can be distinguished from the other two large islands of the group because its hills vary little in height, and it is almost bare.

Bogil Do (Pogil To) (34°09'N., 126°32'E.), separated from Nohwa Do by a narrow channel, is densely wooded, with many sharp peaks. A submarine cable has been laid from the NW coast of Bogil Do and Na Do, 1.5 miles NW.

Hoenggan Do, the N island of the group, is separated from Nohwa Do by Janggu Sudo (Changgu Sudo), which has depths of 20 to 31m in the fairway. An overhead power cable spans the channel with a clearance of 31m. From E the island appears as a flat ridge terminating in a steep, rugged slope which ends in a cliff.

The maximum velocity of the tidal currents in the passage is 4.5 knots. A light is exhibited on the N coast of Hoenggan Do.

Yongjeon Cho, about 1.5 miles E of Hoenggan Do, marked by a light, is a drying pinnacle rock. There are heavy overfalls over this rock when the tidal currents are strong, but at slack water it is extremely dangerous as it is not seen.

A wreck lies sunk about 0.5 mile SSW of Yongjeon Cho.

1.10 Hoenggan Sudo (34°16'N., 126°35'E.), deep and free from dangers in the fairway, lies between the N island of Soan Gundo (Soan Kundo) and the islands E of Haenam Gag. Baegil Hang lies E of Haenam Gag and N of the islands of Heugil Do and Baegil Do.

Haenam Gag (34°18'N., 126°31'E.), the SW extremity of the Korean peninsula, is surmounted by a pointed hill and another hill close N, both of which are conspicuous. It is also the SW extremity of Tarumasan Sammyaku, which extends to Delma San 489m high, 6 miles NNE, and has a very irregular outline.

Baegil Hang (Paegil Hang) (34°18'N., 126°34'E.) is entered from W between Haenam Gag and the W end of Heugil Do (Hugil To) about 1 mile SE. The S and E sides of the harbor are formed by two islands, Heugil Do and Baegil Do, 0.5 mile NE.

Tides—Currents.—In Baegil Hang, currents attain a rate of 4 knots.

Anchorage.—Anchorage may be obtained by small local vessels in Baegil Hang, in a depth of 10m. A good berth is with the NE tangent of Baegil Do in line with the S summit of **Gye Do** (34°18.5'N., 126°36.8'E.), bearing 069°, and the SW extremity of Baegil Do, bearing 155° in a depth of 9m, where the tidal currents are weak.

Caution.—An overhead power cable runs between Baegil Do and Donghwa Do, and has a 37m vertical clearance. A dangerous wreck, at a depth of 26m, lies in the SW entrance to Baegil Hang about 1 mile W of Heugil Do.

1.11 Heugil Do (Hugil To) (34°17'N., 126°33'E.), 184m high and wooded, is fringed by a bank, with depths of less than 5m extending 1 mile ENE from its NW point. Baegil Do, 109m high, lies 0.5 mile NE of Heugil Do. An overhead cable, with a vertical clearance of 49m, spans the channel between the E end of Heugil Do and Baegil Do, 0.4 mile NE.

The E continuation of Hoenggan Sudo leads N of Somo Do and the islands E of Soan Hang, and S of the islands on the W side of the approach to Tungnyang Man (Deugryang Man). Meeruan, a rock, lies on the N side of the passage about 2.8 miles NNW of Somo Do. A light is exhibited from a red round concrete tower, with black bands, standing on the rock.

Somo Do (Soma Do) (34°14'N., 126°47'E.) is 121m high at its E extremity. Somo Do has a conspicuous clump of trees on the W side of its summit. A reef extends 0.5 mile SW from Somo Do; two above-water rocks, the inner 17m high, stand on the reef. A light is shown from the NW extremity of Somo Do. Taema Do, about 0.8 mile S of Somo Do, has an irregular serrated summit. A bank, with a depth of 9.6m at its W edge, extends about 1 mile W from Taema Do. The high and flat **Pulgun Do** (Bulgeun Do) (34°09'N., 126°45'E.), with two small islets close S, lies about 1.5 miles S of Taema Do. A rock, with a depth of less than 1.8m, lies close N of the N extremity of the island.

Ch'ongsan Do (Cheongsan Do) (34°11'N., 126°53'E.), is 343m high at the SE end of the island. The island is mostly cultivated but the peaks are bare. There are several villages on the coast. Close off the NW coast of Ch'ongsan Do are two islets, Chang Do (Jang Do) and Chich'o Do (Jicho Do), 1 mile S of it. A rock, 21m high, lies about 0.7 mile SW of Chich'o Do (Jicho Do) and 0.55 mile offshore. An important fishing village lies at the head of an inlet entered 0.5 mile SSE of Chich'o Do. A light is exhibited from the head of two breakwaters near the village.

A submarine power cable is laid between the N side of Ch'ongsan Do and the S end of Sinji Do, 5.5 miles NNW. The cable is marked along its length at intervals of about 1 mile by several lighted buoys.

Tides—Currents.—In the middle of Hoenggan Sudo the tidal currents set in an E and W direction. The E current attains a velocity of 4.5 knots, and the W about 3.5 knots. In Baegil Hang (Paegil Hang) the tidal currents reach a velocity of from 4 to 5 knots.

Between Ch'ongsan Do and Soan Hang the tidal currents set in a N direction with the rising tide, and in a S direction with the falling tide. The current attains a velocity of about 2 knots.

Anchorage.—Anchorage may be obtained by vessels with local knowledge in fine weather, off the W side of Ch'ongsan Do in position 34°10.7'N 126°50.9'E, in a depth of about 15m. Anchorage may be also obtained during N winds in a bay on the S side of Ch'ongsan Do at its W end. The bay has depths of 10 to 15m and the best anchorage during N winds is in a depth of 11m. A sandy beach lies at the head of the bay.

On the E side of Ch'ongsan Do lies a shallow bay the S entrance point of which is formed by **Hang Do** (34°11'N., 126°56'E.), 89m high. In this bay small local vessels can obtain shelter from SW winds, in depths of 7m, sand and mud.

Off-lying Islands

1.12 Geomun Do (Komun Do)(34°02'N., 127°19'E.), the outermost group of islands along this part of the coast, lies about 23 miles S of the Korean coast and about 37 miles NE of Cheju Do (Jeju Do). The group consists of two large islands, Seo Do (So Do) and Dong Do (Tong Do), and a smaller island Go Do (Ko Do) lying between their SE ends. The islands of this group are easily distinguished from the numerous other islands and rocks in the vicinity, being larger, rugged, and densely wooded. Except when seen from SE, Seo Do and Dong Do have the appearance of one island. A breakwater extends for 72m from the E side of the village on the NE side of Seo Do, about 0.3 mile SW of the NE extremity of Seo Do. A light is shown near the S extremity of Seo Do.

Daesambu Do, with some smaller islets lying close offshore, lies about 3 miles E of Dong Do. Its summit rises to a conspicuous conical peak.

Sosambu Do, about midway between Daesambu Do and Dong Do, is a small group of islets and rocks, the S islet of which has a dome-shaped peak, conspicuous because of its brownish color.

Man Am, nearly 0.75 mile N of Dong Do, is 3m high and steep-to.

Donae Hae (34°03'N., 127°18'E.), lying between Dong Do and Seo Do, is a sheltered spacious harbor with depths of 15 to 18m. The holding ground is good, but strong E winds cause a swell. The main entrance, and the only one which can be used by deep draft vessels, is through a channel about 0.18 mile wide between the SW end of a rocky spit, extending 0.45 mile SSW from the SW point of Dong Do and Go Do. A lighted buoy marks the fairway SW of the rocky spit.

Tides—Currents.—Tidal currents in Donae Hae set N with the rising tide and S with the falling tide, attaining a velocity of 1.25 to 1.75 knots in the N entrance.

Anchorage.—The best anchorage is on the E side of the harbor between the N entrance point and the SW point of Dong Do, in a depth of 15m, mud. The swell caused by the SE gales is less felt here than on the W side.

1.13 Sangbaeg Do (Sangbaek To) (34°02'N., 127°37'E.), the S of the off-lying islets, lies about 14 miles E of Geomun Do. This group consists of three unmistakable islets which resemble a castle from all directions. It was reported that Sangbaeg Do is an excellent radar target.

Habaeg Do (Habaek To) (34°03'N., 127°35'E.), 1.5 miles NW of Sang baeg Do, is a group consisting of three islets and several pinnacle rocks; the S of the two W islets is 147m high and pyramidal in shape. From its S end several above-water rocks extend 0.5 mile S.

Both Sangbaeg Do and Habaeg Do are easy to identify because of the precipitous summit of Habaeg Do. A light, with a racon, is situated on the summit of Habaeg Do. The summits of both groups are also thickly covered with shrubs.

Mun Do (34°07'N., 127°31'E.), about 4.75 miles NW of Habaeg Do is 102m high, and, with the exception of its summit, is thickly covered with shrubs. Its coasts, except on its E side, consist of vertical cliffs which are prominent.

Mun Seo (Mun So) (34°08'N., 127°34'E.), 23m high, lies about 2.75 miles ENE of Mun So, and consists of two pinnacle rocks lying close together. An 8.5m rocky shoal lies about 0.8 mile S of Mun Seo.

Islands in the Approach to Deugryang Man (Tungnyang Man)

1.14 Maemu To (Maemu Do) (34°13'N., 127°00'E.), on the E side of the W approach to Deugryang Man, lies about 17 miles NW of Geomun Do and 4 miles NE of Ch'ongsan Do. Maemul To (Maemul Do) is one of three islands of similar appearance, all thickly wooded and darker than other islands in the vicinity. The island Ku Do (Gu Do), 127m high, lies about 0.75 miles E of Maemul To. The third island lies about 0.35 mile S of Ku Do. A light is shown from the NW side of Oyudo Island.

A local magnetic anomaly, with a deflection of 4°E and 5°E, was reported in a position 2 miles SSW of Maemul Do covering an area of about 1 mile.

Hwangje Do (34°11'N., 127°05'E.), about 4.3 miles ESE of Maemul To, consists of a group of six islets which, when seen from E or W, have the appearance of being three islets.

Togu Do (Deogu Do) (34°15'N., 127°01'E.), about 1 mile N of Ku Do, presents two distinct peaks when seen from E or W. Sodogu Do, about 1.5 miles N of Togu Do, is conical with thickets of brushwood. A light is exhibited on the NW coast of Sodogu Do. A bank, with a depth of 5.5m, extends 0.2 mile NW from the islet.

Hyeongje Do (Choko To), midway between Togu Do and Sodogu Do, consists of three islets lying close together; from a distance these islets have the appearance of one island.

Chodo Gundo (Chodo Kundo)(34°14'N., 127°15'E.), about 10 miles N of Geomun Do, consists of one fairly large island and a number of islets and rocks. Cho Do, the largest island, may be identified by a peculiar long ridge which appears as a sharp peak when seen from N or S. Chang (Jang) Do, the westernmost island of the group, lies about 2.75 miles WSW of Cho Do; it is high, cliffy, and flat-topped. The N islet of the group lies about 2.75 miles N of Cho Do; a rock which dries 0.9m lies close W of another rock about 1.3 miles SE of this islet.

1.15 Yongman Do (Yeogman Do)(34°10'N., 127°21'E.), about 5 miles SE of Chodo Gundo and 7 miles NNE of Geomun Do, has a flat summit about 216m high and is thickly covered with trees. The N part of the island is a bare conical

hill, 113m high, joined to the S part by a sandy isthmus and is prominent from E or W. Yongman Do Light is shown from the N part of the island.

Sonjug Yeoldo (34°17'N., 127°23'E.), consists of three islands, Sonjug Do and Geomun Do with the smallest, Sogeomun Do, between them. Sonjug Do, the W island, is wedge-shaped with a conical hill at its NE end. Sogeomun Do, 92m high and somewhat flat, lies close off the NE extremity of Sonjug Do. Geomun Do, 0.75 mile E of Sonjug Do, is the easternmost island of the group and has a sharp double peak.

Mog Seo, 44m high, with an above-water rock 183m S of it, lies a little over 0.75 miles W of Sonjug Do.

Dae Am (Tae Am)(34°17'N., 127°26'E.), a red rock 55m high with a single pine tree on its summit, lies 1.75 miles E of Geomun Do.

Wang Do (34°16'N., 127°32'E.), about 6.5 miles E of Sonjug Yeoldo, is clifty and cultivated. A rock, 27m high, lies about 0.4 mile SE of Wang Do. Vessels should not approach the N side of Wang Do within 0.2 mile. Daeduyeog Seo, two black rocks, the S of which is 28m high, steep-to, and marked by a light, lies 1 mile S of Wang Do.

Gansu Jedo, lying SW of Wang Do, is a group of five islands and rocks lying 3 miles SE of Geomun Do. Pyeong Do, the central and largest island is clifty along its S coast and there is a sharp peak at its SW end. The central part of the island is low-lying, while its N part is flat and attains an elevation of 137m. Gu Do, 158m high, the S and highest island of the group, is clifty except at its SE point. Sopyeong Do, 65m high, lies less than 0.5 mile N of Pyeong Do, with an islet midway between.

Between Chodo Gundo and Sonjug Yeoldo and the entrance of Deugryang Man to the N, there is a chain of islets extending about 15 miles ENE from **Paek So** (34°15'N., 127°06'E.) to **Jima Do** (34°20'N., 127°22'E.).

The latter islet is saddle-shaped and thickly covered with shrubs.

Deugryang Man (Tungnyang Man)

1.16 Deugryang Man (34°35'N., 127°05'E.), which affords shelter, is about 8 miles wide and 20 miles long. This extensive inlet is approached by one of three channels which leads between several islands and islets which encumber the entrance. The NW side of the bay is fairly shoal, with depths of less than 5m extending up to 2 miles offshore in places. Depths on the SE side, which is mostly steep-to, are greater. The bottom everywhere is soft mud.

The NW side of the bay is backed by mountain ranges, with many bare or rocky peaks, rising precipitously from the coast. Ch'ongwan San, the highest peak, has a conspicuous cairn on its summit. The E side of the bay is formed by **Goheung Bando** (Kohung Bando) (34°33'N., 127°20'E.), which has several barren peaks. P'aryeong (Palyong) San, the summit of this large peninsula, is very conspicuous.

Changgododo Sudo, the main channel leading into Deugryang Man, lies between Sinji Do and Choyak To, on the W, and Saengil To and Pyongil To, on the E. The direct approach to this channel from seaward is between Ch'ongsan Do and the islets extending SSE from Saengil To. The channel N of

Saengil To leads W of Taech'ilgi Do, Changgu Do and Chilma Do, and then NNE into the bay.

Saengil To (34°19'N., 127°00'E.), one of the most conspicuous islands in the vicinity, has two distinct peaks, both of which are conspicuous because of a blackish color and of their being densely wooded. The N peak is slightly flat, and the S peak has the appearance of two nipples. Pyongil To, separated from Saengil To by a passage about 0.5 mile wide, rises to a sharp peak near its middle part.

Sinji Do rises to its summit near its W end. This summit shows as two conspicuous peaks when seen from E. Chang Do and Mohwang Do lie S of Sinji Do. A light is exhibited on the NE coast of Mohwang Do. Choyak To, separated from Sinji Do by a passage with moderate depths in the fairway, is hilly. The summit of Choyak To appears as a level ridge, the easternmost peak being sharp and conspicuous. A light is shown from about 2.3 miles SE of the W extremity of Sinji Do. A power cable with a vertical clearance of 29m spans the channel between Sinji Do and Wan Do. Red and white metal towers, marked by obstruction lights, stand at each end of the cable.

A bridge is under construction close N of the power cable.

Geumdang Sudo (Kumdang Sudo)(34°25'N., 127°07'E.), the central channel leading into Deugryang Man, lies between Ch'ung Do and Kumdang Do, on the W, and Geogeu Do, on the E. The channel leads W of the densely wooded and conspicuous **Hou Do** (34°24'N., 127°07'E.) and Yonhong Do, about 2.75 miles farther NNW. Chungang Do (Chuo To), the black steep-to rock about 0.5 mile SW of the S end of Yonhong Do, can be passed on either side, but the W side is recommended. Overhead cables exist between Yonhong Do and Geogeu Do. They have a minimum clearance of 19m.

Kumdang Do, with several bare hills, lies at the N end of the E side of Changgododo Sudo, in addition to the N end of the W side of Geumdang Sudo.

Geogeu Sudo (Kogum Sodo) (34°26'N., 127°16'E.), the N channel leading into Deugryang Man lies between Geogeu Do and Sisan Do, on the SW, and Goheung Bando (Kohung Bando), on the NE and N. The channel leads between **Gye Do** (34°30'N., 127°14'E.), the largest and highest of a group of islets and rocks lying off the NE extremity of Geogeu Do, and Kamdung So (Kanton Yo), a detached rock, 2m high, about 0.6 mile farther NNE. The main channel through the W end of Geogeu Sudo is N of Sanghwa Do, and between Taegodu Do, on the S, and Sorok To, on the N.

Numerous overhead power cables are located in Geogeu Sudo, Mado Sudo and between Choyak To, Geogeu Do, Sinji Do, and Wan Do. The charted vertical clearances of these cables range from 12m for those S of Sorok To to 35m for those in Mado Sudo.

1.17 Geogeu Do (34°27'N., 127°10'E.) is covered with trees which stand out in contrast to the bare appearance of the hills on Goheung Bando (Kohung Bando). The wooded mountains in the E part of the island are conspicuous when seen from seaward. Sisan Do, on the SW side of the entrance of Geogeu Sudo, lies about 1.75 miles ESE of Geogeu Do. The summit of Sisan Do appears almost round from any direction. A light is exhibited close SE of the S extremity of Sisan Do. Another light is shown from the N end of the island. Bua Do (Pua Do),

89m high, lies about 2.5 miles W of Sisan Do is conical and wooded.

Jijug Do (Jiho Do), on the NE side of the entrance of Geogum Sudo, is the largest of numerous islets and rocks lying off the S extremity of Kohung Bando (Goheung Bando). The summit of this islet is a black hill which rises steeply over the S extremity.

Tides—Currents.—In Kumdang Sudo the tidal currents set in a NW and SE direction, attaining a velocity of 3 knots at spring tides. Slack water occurs about 40 minutes after high water at Ch'ang Chiang, with the ebb beginning to run almost immediately.

In Kogum Sudo the tidal currents set in a NW and SE direction, attaining a velocity of 2 knots. Slack water occurs about 30 minutes after high water, with the ebb beginning to run almost immediately.

Anchorage.—Vessels may obtain anchorage anywhere in Deugryang Man according to draft. The holding ground is very good, and the tidal currents are not felt much here.

Islands in the Approach to Yeoja Man (Suncheon Man)

1.18 Tanggeon Yeo (34°22'N., 127°31'E.), a group of conical rocks, lies about 10 miles SE of the S extremity of Goheung Bando, and is the outermost of the dangers on the W side of the entrance of Yeoja Man. A light is shown from Tanggeon Yeo; a racon is situated at the light.

Gogdu Seo, about 1.8 miles NNW of Tanggeon Yeo, consists of two rocky islets, the SE one of which is wooded and of a conspicuous reddish color. A dangerous wreck lies sunk between Tanggeon Yeo and Gogdu Seo.

Naro Yeoldo (34°30'N., 127°30'E.) consists of two relatively large islands and several islets lying on the W side of the approach to Yeoja Man (Suncheon Man). Onaro Do, 392m high, the S island, has a wooded range of hills extending from its S end to its summit, on which stands a conspicuous tower.

Naenaro Do (34°30'N., 127°28'E.), 240m high, separated from Oenaro Do by a narrow passage, is largely wooded and hilly. Several islets and rocks lie within 3 miles of the E side of these two islands. Samam Lighted Beacon stands at the W end of Naenaro Do, 1.3 miles N of Sayang Do Light. A drying rock was reported to lie about 0.5 mile W of this beacon. Sayang Do, 201m high, lies at the W end of the Oe Sudo passage separating Oenaro Do and Naenaro Do. Oe Sudo is a narrow intricate channel with depths of 6 to 20m in the fairway. It is suitable for small local craft. A bridge spans connecting the two islands at the W end of the channel. Overhead power cables, laid between pylons painted red and white in stripes and each marked by a light, connect Naenaro Do with Oenaro Do and with Sayang Do; the least vertical clearance is 39m. A light is exhibited on the S side of Sayang Do. A light is exhibited on the SE extremity of Naenaro Do. A breakwater extends 45m WNW from the W side of Oenaro Do, a little over 1 mile SE of Sayang Do S extremity. There is an oil tank close SSE of the root of the breakwater and there is a mooring buoy off the head of the breakwater. A quay about 305m long with a short concrete pier projecting from it, is situated close N of the breakwater.

Kumo Yolto (Geumo Yeoldo) (34°30'N., 127°47'E.), consisting of three islands and several islets, lies on the E side of the approach to Yeoja (Suncheon) Man, and the W side of the approach to Yeosu Haeman. Sori Do (Sorido), the S island of the group, has a conspicuous pyramidal peak, 230m high, at its S end. Sori Do Light is shown from the S point of the island.

An Do (Ando) is separated from Sori Do by a channel. Shingang Sudo (Singang Sudo) has a clump of trees on its summit which is a good landmark. **Geumo Do** (Kumodo) (34°32'N., 127°45'E.), the largest island of the group, is densely wooded. The peak at the SE end of the island is a good mark.

Caution.—An overhead power line with a vertical clearance of 19m extends from An Do to the mainland. Shoals, with a depth of 6.4m, lie about 2.3 miles SSW of the W end of Geumo Do.

1.19 Geumo Sudo (Kumo Sudo) (34°33'N., 127°45'E.), N of Geumo Do, is deep and free of dangers in the fairway. Vessels should keep in mid-channel to avoid the tide rips off the points of Geumo Do.

Regulations.—A Precautionary Area and a Restricted Area exist within **Kumo Sudo** (43°33.3'N., 127°45.3'E.) and are bounded, as follows:

- a. 34°35'N., 127°41'E.
- b. 34°35'N., 127°50'E.
- c. 34°30'N., 127°50'E.
- d. 34°30'N., 127°41'E.

Vessels over 100 grt are recommended not to navigate within this area. Between Tarduri Do and Soduri Do to the N and Geumo Do to the S, navigation is restricted during the period from April 1 to July 31 each year due to reduced visibility.

Kumo San (34°35'N., 127°48'E.), a 320m high hill with a saddled-shaped depression, forms a good landmark near the SE end of Tulsan Do. Koma Gak Light is shown from a white, round, 7m high, concrete tower that stands near the coast 0.75 mile E of Kumo San.

An islet, 39m high, lies 0.25 mile off the SE side of Tulsan Do, fronting a small bay, 1 mile NNE of Tulsan Do. A patch drying 2.7m lies close ESE of the islet.

Fish nets are set within the area extending up to 4 miles ESE and 6 miles SE of the SE end of Tulsan Do. A fish haven (concrete blocks) extends up to 0.75 mile SSE of the point.

Tides—Currents.—The tidal currents about 1 mile S of Tanggeon Yeo have a velocity of about 2 knots. Vessels are recommended to give Tanggeon Yeo and Gogdu Seo a berth of at least 1 mile because of the strong tidal currents in their vicinity.

In Geumo Sudo the tidal currents set in a W direction with the rising tide at a velocity of 4.3 knots, and in an E direction with the falling tide at a velocity of 3.25 knots.

Anchorage.—Small local vessels can obtain good anchorage in the bay SW of the 39m high islet, in a depth of 8m, mud. A drying reef extends 137m SE from this islet.

Caution.—Pinnacle rocks are reported to exist and they are extended up to 4 miles from the coast between **So Yong Dan** (34°24'N., 127°48'E.), and **Tulsan Do Light** (34°42'N., 127°48'E.).

Yeoja Man (Suncheon Man)

1.20 Yeoja Man (34°40'N., 127°30'E.) lies between the E side of Goheung Bando and the W side of Yosu Pando (Yeosu Bando). The entrance is encumbered by numerous islands which extend SE to the N side of Geumo Sudo. The recommended channel into the inlet is So Sudo, which lies between **Nang Do** (34°36'N., 127°33'E.) and the E end of Goheung Bando. This passage is about 0.6 mile wide, but is reduced to a width of 0.3 mile at its N end by the reef extending from the W side of the channel. Nang Do has a cairn on its summit which is conspicuous from seaward.

Caution.—Two overhead power cables, one with a vertical clearance of 38m, the other with a vertical clearance of 35m, cross the S end of So Sudo.

Gae Do (Kae Do)(34°34'N., 127°40'E.), about 5 miles SE of Nang Do, is the largest of the several islands fronting the entrance of Gamag Yang. The summit of Gae Do, 337m high, along with a 330m high summit close NW of it, are both pointed and form good landmarks. Anchorage may be obtained in the E bay on the S coast of Gae Do, by small local vessels, in depths of 7 to 13m.

Yosu Haeman (Yeosu Haeman)

1.21 Yosu Haeman (34°40'N., 127°51'E.) is an extensive inlet between **Tolsando** (34°38'N., 127°48'E.) and Yosu Bando on the W side, and Namhae Do on the E side. At its head are two branches, the W leading into Kwangyang Man, and the E leading into Noryang Sudo.

Kanyo Am (34°17'N., 127°51'E.) is the outermost of dangers lying on the approach to Yosu Haeman. It is 23m high and lies 16 miles E of Kwang Do and is marked by a lighted beacon. **Chag To** (34°25'N., 127°54'E.) lying about 8 miles NNE of Kanyo Am, is 100m high and flat-topped.

Sejon Do (34°30'N., 128°05'E.), about 10 miles ENE of Chag To, shows two curiously-shaped rocky peaks when seen from NW, and when seen from NE, these two peaks are in line. A light has been established on Sejon Do. A village is located on the W side of Sejon Do. A dangerous wreck lies 7 miles WNW of Sejon Do.

Kal To, about 6 miles NE of Sejon Do, shows four peaks when seen from SE. Near the S coast of the island there is a 64m high pointed rock, which is conspicuous when seen from the SW.

Kudol So (Gudol Seo) (34°37'N., 128°07'E.) lies about 4.5 miles NW of Kalto. Kudol So Light stands on the islet.

1.22 Paekso (Baeg Seo) (34°38'N., 128°00'E.) lies 6 miles W of Kudolso; it is a brown, flat, rocky islet. A light, from which a racon transmits, is shown from the islet. Taedo (Dae Do), about 3.5 miles NW of Paekso, is covered with brushwood. A light is exhibited on Paek So (Baeg Seo). A lighted buoy is moored 3.5 miles WNW of Taedo (Dae Do) and marks a 16.8m patch. Lighted buoys mark the approaches to Yosu oil terminal.

Tides—Currents.—In Yosu Haeman, the tidal currents set in a N direction with the rising tide, attaining a velocity of about 1 knot. A velocity of 2 knots is reached in the vicinity of

the S end of the group of islets and reefs lying in the channel off the NW side of Namhae Do.

In the vicinity of Sejon Do, the ENE current has a velocity of 1.3 knots, while the tidal currents between Sejon Do and Kal To (Gal Do), which set WSW and E, attain a velocity of about 1 knot.

To the S of Paek So, the WSW current has a velocity of 1.3 knots, and the SSE current, 0.75 knot. Northward of the area between Paek So and Kudol So the tidal currents set in a WNW and a NE direction at 0.75 knot.

Aspect.—**Tolsan Do** (34°38'N., 127°48'E.) is an irregular island with rugged hills rising inland. A good landmark is the hill with a saddle-shaped depression in it at the SE extremity of the island. Another conspicuous peak is about 4.3 miles farther NW. **Tai Tan** (34°39'N., 127°49'E.), about 4 miles N of the SE end of the island, is a conspicuous point, backed by several conical hills.



Tolsen Bridge

1.23 Namhae Do (34°48'N., 128°00'E.), one of the largest islands off the S coast of Korea, is mountainous. A bridge, with a vertical clearance of about 25m, spans Noryang Sudo at the N end of Namhae Do. Mangun San, the conspicuous summit of the island, rises near the middle of the W part of the island. A metal framework television tower, marked by an obstruction light, stands on the mountain. In the SE part of the island is a pointed peak about 1.3 miles WNW of its SE extremity; a stone enclosure, which is very conspicuous, stands on this summit. About 3.5 miles farther NW is the highest peak in this part of the island. It is a black rocky mountain, conspicuous from a distance. In the SW part of the island, Sori San is the summit of a precipitous range, the S side of which slopes steeply to the coast. A conspicuous tower stands on the summit of Sori San. Ungbong San, about 1 mile W of Sori San, shows a conspicuous pointed peak from E or W. Another peak, about 2 miles NW of Ungbong San, has a conspicuous pointed summit when seen from N or S.

Aenggang Man, on the S side of Namhae Do, affords shelter from all directions, except from S. Anchorage can be taken off the village on the W side of the head of the bay, in 7 to 15m, mud.

Mijo Kundo is the group of islands and islets separated from the SE extremity of Namhae Do by Mij Sudo.

U Am (34°43'N., 127°48'E.), 1 mile NE of Tolsan Do, is a white rock easily identified in the daytime. A light is shown from U Am.

In the inner part of Yosu Haeman, on the E side of the channel, is **Samgi** (Sam Gi) (34°48'N., 127°49'E.), a reef with three drying heads, the highest being 3m. Fishing boats assemble in this vicinity.

Yang Am (34°44'N., 127°47'E.), a reef, drying 2.8m, lies 0.45 mile E of Odongdo. A lighted beacon stands on the reef. A 4.5m patch, marked by a lighted buoy, lies in the harbor 0.7 mile NW of Odongdo. Yosu Haehyop is the channel separating the N end of Tulsando from the SE end of **Yosu Bando** (34°44'N., 127°45'E.), 0.1 to 0.2 mile wide, with depths of 6 to 16m in the fairway.

Tides—Currents.—Tidal currents in Yosu Haehyop set W with the rise and E with the fall.

Changgun Do (34°43.8'N., 127°44.3'E.) is situated at the W end of Yosu Haehyop on the S side of the channel. A bridge with an overhead clearance of 20m spans the channel 183m S of Changgun Do Light, shown from 10m high concrete tower.

Yosu (34°44'N., 127°45'E.)

World Port Index No. 60370

1.24 Yosu (Yeosu), a major commercial port, fishing port, and first port of call is also an important rail terminus and has been developed as a subsidiary port for Pusan. The port consists of six major terminals:

1. Dry Cargo Harbor
2. Honam Refinery—Crude Oil Wharf
3. Honam Oil Refinery—Refine Product Wharf
4. Advanced Material Pier
5. Energy Terminal
6. Kwangyang Steel Mill

Yosu Radio Service provides 24 hour service and contact through VHF channel 12 can be made.

A Deep Water (DW) Route has been established in the Gulf of Yosu. It leads through the Designated Area, where a maximum speed limit of 12 knot is enforced. The DW route approach from seaward lies 3 miles SW of **Paek So** (34°38'N., 128°00'E.) and it leads through the Designated Area into Yosu Haeman.

Caution.—Fish havens have been established in close proximity to this route in the vicinity of the VLCC pilot boarding station and NW of the VLCC quarantine anchorage.

Pilotage

Pilots board, as follows:

1. Vessels of less than 13m draft and 50,000 gross tons—position 34°44.4'N, 127°49.8'E.
2. Vessels of 13m draft and over—position 34°40.7'N, 127°55.8'E.

Regulations

Designated Areas, best seen on the chart, have been established in the approaches to Yosu.

Vessels over 200m long, deep draft vessels, tug boats, and vessels carrying dangerous cargo are requested to inform the District Maritime and Port Authority of the vessel's name,



Yosu

gross tonnage, and scheduled time to enter the Designated Area at least 12 hours prior to entering the Designated Area.

A maximum speed limit of 12 knots is enforced within the Designated Area in Yosu Haeman swept channel; this area lies within the bounds of:

- a. 34°50.2'N, 127°47.0'E.
- b. 34°50.7'N, 127°48.5'E.
- c. 34°45.0'N, 127°48.8'E.
- d. 34°45.0'N, 127°50.1'E.

Anchorage

VLCC No. 2, about 2 miles NW of Paek So, is a circle with a radius of 0.6 mile. This anchorage is for vessels with a draft of 13m and over and encloses the outer pilotage boarding ground.

No. 2 Anchor Berth (WAD-02), for vessels greater than 70,000 grt, is a circle with a 0.4 mile radius located about 3.5 miles WNW of No. 1 Anchor Berth.

Quarantine anchorages are established 5.75 miles ESE of **Odong Do** (34°44.8'N., 127°46.3'E.) for deep draft vessels, and 1 mile NE of the same island for other vessels.

Yosu Haeman Anchorage.—There are five designated anchorage areas, the limits of which are best seen on the chart, situated on the W side of the main channel, as follows:

1. Area A—For vessels with a draft of less than 8m.
2. Area B—For vessels with a draft of less than 11m.
3. Area C—For vessels with a draft of less than 13m.
4. Area W—For vessels with a draft of less than 14.5m.
5. VLCC No. 1—For vessels of less than 50,000 gross tons and drafts of less than 13m.

Yosu Town

1.25 Dry Cargo Harbor (34°44.3'N., 127°45.3'E.) has three piers in Yosu Town; Pier No. 1 is used only by small

vessels. Pier No. 2 can accommodate vessels having less than 6m draft, and Pier No. 3 is for vessels of less than 8m draft.

The harbor is protected by the breakwater joining Odongdo to the shore SW and by a breakwater extending 0.3 mile NNE from the NW point of the island. Another breakwater extends E from the shore of about 1 mile NW of Odong Do Light, then bends SE.

Anchorage.—Anchorage with good holding ground, in depths of 8 to 16m, mud and sand, may be obtained in Bug Ham (North Harbor), 1.3 miles NNE of Odong Do Light; it accommodates vessels up to 10.6m draft.

Nakp'ogak (34°51'N., 127°47'E.) is a cliffy point forming the NE extremity of Yosu Pando. Nakp'ogak Light is shown from a white, round, concrete tower, that stands near the point.

Noryang Yo, a rock with a depth of 1.5m, lies on the edge of the coastal bank 0.5 mile SE of the E extremity of Myodo. Another rocky shoal, with a depth of 1.1m, lies in the fairway about 0.33 mile E.

Myodo (Myo Do) (34°53'N., 127°45'E.), located 2.25 miles WNW of Nakp'ogak and the highest point on the island rises to 248m.

Noryang Yo, a rock with a depth of 1.4m, lies on the edge of the coastal bank 0.5 mile SE of the E extremity of Myodo. Another rocky shoal, with a depth of 1.1m, lies in the fairway about 0.4 miles farther E. Another rock, with a depth of 0.1m, lies 0.5 mile N of the same point. Buoys mark the fairway in the vicinity of the dangers. Passage II connects, S of Lighted Buoy No. 19; a buoyed channel, with a least depth charted depth of 6.5m, leads through Myodo Sudo about 3.5 miles W then SW direction for about 2 miles to a jetty situated 5 miles WSW of Nakp'ogak.

Myodo Sudo is the channel S of Myodo. It is narrow and encumbered by several islets and shoals towards its W end.

Anchorage.—Anchorage may be obtained N of Myodo, in depths of 8 to 13m. Anchorage in the S of Myodo is suitable only for small local craft. Although the holding ground in the S part is good, the tidal currents are strong and cannot be relied as a safe anchorage.

Yosu-Honam Oil Refinery

1.26 Crude Oil Wharf (34°51.0'N., 127°46.9'E.) is situated at the head of Yosu Haeman, 0.75 mile SE of Nagp'ogak Light. At No. 1 Wharf, crude carriers up to 285,000 dwt or product carriers up to 80,000 dwt can be accommo-dated. At No. 2 Wharf, crude carriers up to 80,000 dwt or product carriers up to 30,000 dwt can berth.

Depths—Limitations.—A passage through Sam Gi Channel, 3.75 miles SSE of the wharf, is made before a high water to berth with the slack water. Berthing conditions require:

1. Vessels are swung around to steer a course on or about 160°, N of the crude carrier berth, assisted by tugs. The approach to the berth is then made at an angle of 10° under a speed limit of 0.3 knot.
2. Wind conditions not exceeding 25 knots for south-erlies and 29 knots for northerlies.
3. To berth with the bow facing seaward, to ensure a smooth departure.
4. The maximum draft limit is 21m.

Refine Product Wharf (34°51.7'N., 127°44.2'E.) has seven tanker berths of between 2,000 to 50,000 dwt with facilities to accommodate vessels day or night.

Berth No. 1 and Berth No. 4 allow vessels up to 5,000 dwt.

Berth No. 2 takes vessels up to 2,000 dwt.

Berth No. 3A takes vessels up to 35,000 dwt.

Berth No. 5 can take a vessel of 50,000 dwt.

Berth No. 6 takes vessels up to 5,000 dwt.

Berth No. 7 takes tankers of 12,000 dwt.

In addition, there is one more berth for chemical and LPG product carriers of less than 5,000 dwt.

The approach channel to the Refine Product Wharf has a least depth of 3.2m at LLW and berthing may require crossing this channel at a high tide.

Yosu-Nakpo Wharf

1.27 Raw Material and Fertilizer Wharf (34°51.7'N., 127°44.7'E.) has crane facilities. It has a straight running wharf and can accommodate 50,000 dwt and 30,000 dwt bulk carriers in addition to two 20,000 dwt vessels.

Advanced Material Pier (34°51.5'N., 127°44.1'E.) is located close to the Refine Oil Product Wharf. This pier accommodates one vessel of up to 4,400 dwt with a draft of 5.5m.

Yosu Energy Berth (34°51.6'N., 127°46.2'E.)

1.28 Pier 1.—The berth provides cargo connection to the shore facilities for LPG tankers. The cargo operations conducted involve are Liquified and Vaporized Butane, as well as Vaporized and Liquified Propane. This pier accommodates ocean-going LPG tankers from 30,000 to 75,000 cu. m.

Some mooring restrictions apply during daylight, wind, and current conditions.

Pier 2.—This berth provides facilities for coastal tankers of 1,000 to 3,000 cu. m.

Kwangyang Steel Mill (34°54'N., 127°45'E.)

1.29 Kwangyang Steel Mill is a new port built on reclaimed land 3 miles WNW of Nakpo'ogap Light. A deep water terminal has been constructed on the N side of the channel, 1 mile NE of Myodo. This terminal accommodates vessels of up to 250,000 dwt handling bulk, coal, and ore cargoes.

At the head of Yosu Haeman, from N of the N limits of Designated Area and where the Deep Water Route ends, Passage I (Fairway I) begins. This passage leads NW between Lighted Buoy No. 13 and Lighted Buoy No. 14, then divides into four directional traffic flows at 1.5 miles NW of Lighted Buoy No.13. The channel to the NE leads to Kwangyang Hang Basin Zone-1 Anchorage, and further NE it leads to Noryang Sudo. The traffic flow leading S of Lighted Buoy No. 19 is Passage II. This passage leads W to LPG, Energy, Oil terminals, Zone-2 Anchorage, through Myodo Sudo and further. Passage III leads WNW between Lighted Buoy No. 19 and Lighted Buoy No. 20 to Zone-3 Anchorage NW of Myodo. Passage IV leads NW between Lighted Buoy No. 41 and Lighted Buoy No. 42 to the Steel Mill terminals.



Kwangyang Hang—Container Terminals

Winds—Weather.—During the summer and autumn a heavy swell may be raised by the strong E winds which predominate at these periods. In spring the prevailing winds are S and in winter they are W. Gales are frequent during the spring and autumn transition periods between the winter and summer monsoons.

Tides—Currents.—In Yosu Haeman, the currents set N with the rising tide and S with the falling tide attaining a rate of 1 knot. In Yosu Haeyop (Yosu Haehyop), the tidal currents set W with the rising tide and E with the falling tide. The currents are strong, attaining a rate of 3.75 knots with the falling tide; the rate of the flood tide is less than that of the ebb. Eddies

occur on the N side of the strait during the ebb, and, with NE winds there is a confused sea.

As a result of the reclamation work that has been carried out on both sides of the strait, it is reported that the rate of the tidal currents is increasing. The currents were reported by a Japanese man-of-war to have attained a rate of over 6 knots for about 1 hour at springs.

Aspect.—Odong Do, a flat islet 45m high and wooded, is joined to Yosu Pando (Yosu Bando), 0.4 mile WSW by a breakwater. A light is exhibited near the center of Odong Do. Yang Am, a drying reef, lies about 0.45 mile E of Odong Do.

In **Yosu** (34°44'N., 127°45'E.), landmarks include the two silos on the shore near the W end of the breakwater which connects Odong Do and the mainland, the radio tower about 0.3 mile farther W, and the statue about 0.2 mile SW of the silos.

Kwangyang Hang (Gwangyang Hang) (34°51'N., 127°48'E.) is a natural harbor and an open basin, which lies at the head of Yosu Haeman. The basin provides anchorage areas in three zones:

1. Zone 1 lies N of Lighted Buoy No. 16 and NE of Passage I (Fairway). It provides seven anchor berths (Anchor Berth No. 1 through Anchor Berth No. 7) for vessels of less than 100,000 dwt.
2. Zone 2 lies in Myodo Sudo, close E of Songdo islet, and provides Anchor Berth No. 8 through Anchor Berth No. 10.
3. Zone 3 designated in two areas. One lies SW of Myodo and provides Anchor Berth No. 11 and Anchor Berth No. 12. Another section lies off the NW coast of Myodo and provides Anchor Berth No. 13 through Anchor Berth No. 15.

Regulations.—In cases of vessels carrying dangerous cargo, vessels of deep draft, and tows of more than 200m in length, mariners are requested to inform the District Maritime and Port Authority 12 hours in advance with the following information:

1. Vessel's name
2. Tonnage
3. ETA

Limits of Designated Areas:

- a. 34°50'12"N., 127°47'00"E.
- b. 34°43'04"N., 127°49'21"E.
- c. 34°40'07"N., 127°54'48"E.
- d. 34°35'30"N., 127°55'30"E.
- e. 34°35'30"N., 128°00'00"E.
- f. 34°40'30"N., 127°59'43"E.
- g. 34°42'54"N., 127°53'30"E.
- h. 34°43'05"N., 127°51'42"E.
- i. 34°43'50"N., 127°50'42"E.
- j. 34°44'46"N., 127°50'06"E.
- k. 34°46'02"N., 127°50'03"E.
- l. 34°50'42"N., 127°48'30"E.
- m. 34°50'12"N., 127°47'00"E.

Caution.—A fish haven has been established 1.25 miles E of the outer pilot (VLCC) boarding station, 1.25 miles S of Ho Do.

Off-lying Islands—Namhae Do to Geoje Do (Koje Do)

1.30 Yogchi Do (Yogj Do)(34°38'N., 128°15'E.), about 10 miles SE of Namhae Do, is an irregular island covered with grass. The SW end of the island is a cliffy peninsula joined to the island by a low neck of land. The summit of the peninsula is round, covered with grass, and prominent. A light is exhibited near the summit of the SW peninsula.

On the W side of the island there are two bays, but they are exposed and not recommended as anchorages.

Chwasari Do (Jwasari Do)(34°34'N., 128°21'E.), about 4.5 miles SE of Yokchi Do, is the southernmost and largest of a group of islands and rocks. A light is exhibited on Chwasari

Do. A fish haven, consisting of concrete blocks and hulks, lies one mile SE of the S island of Chwasari Do.

Kuk To (Gug Do), about 4.75 miles ESE of Chwasari Do, is a steep brown-colored island. A red pinnacle rock lies close S of the island. From the SW direction Kuk To (Gug Do) is sometimes mistaken for Hong Do, about 14 miles E. **Go Am** (34°30'N., 128°29'E.), about 3 miles SE of Kuk To and marked by a light, is a black rock, 20m high, with a flat top.

Hong Do (34°32'N., 128°44'E.), the outermost danger E of the S extremity of Geoje Do (Koje Do), is rugged and steep. A light, with a racon, is exhibited from the summit of Hong Do.

Yo Do (Yeo Do), about 8.5 miles NNE of Hong Do, consists of two groups of rocks about 0.5 mile apart.

Maemul To (Maemul Do) (34°38'N., 128°34'E.), the largest island S of Geoje Do, rises to a conspicuous pointed peak near its middle part. Another pointed, but lower peak NE of the summit, may be mistaken for the summit from N. Tungga Do, Taeguulbi Do, and Soguulbi Do lie S of Maemul To, and Kaik To and Soji Do lie W of Maemul To. Taeguulbi Do and Soguulbi Do are both very conspicuous black rocks when seen from a distance, and Kaik To, which has a reddish brown color and consists of a group of pillar-shaped rocks, shows as five or six pinnacles when seen from E or W; several of these latter rocks have the appearance of junks.

1.31 Samcheonpo (Samch'onp'o) (34°55'N., 128°04'E.) stands on the Korean mainland, and is approached between Namhae Do and Ch'angson Do, on the W, and Saryang Do a little over 4.3 miles E. The town is fronted by **Samch'onp'o Hang** (34°55'N., 128°05'E.) is a large harbor with its limits extending N and E of Shinsu Do. During the fishing season large numbers of fishing boats use the harbor, the oldest part of which is a basin protected by a breakwater situated close NW of No Mal.

A deep water wharf, capable of accommodating vessels of up to 100,000 dwt, is located about 1.75 miles ESE of No Mal. It has a berthing face about 540m long, with depths of 13.4 to 16m alongside reported. It is used mainly for importing coal for the power station.

Reclamation was in progress on the shoreline NE of Hang Do Light. The breakwater extending SW from Changdung Mal is completed. Samch'onp'o town is situated N of the old harbor.

Aspect.—Landmarks and their locations described are made in reference from the N end of Shinsudo (34°54.6'N., 128°04.6'E.). Sado, with 81m high pylon obstruction light, lies 0.3 mile N. Siyado, 11m high, lies 1.3 miles NW. Mogaedo, 19m high, lies 2 miles WNW. A war memorial on No Mal lies 1 mile N. A prominent war memorial stands on high ground at the S end of the peninsula 0.2 mile E of the Samch'onp'o breakwater light. Two radio towers and another tower, marked by obstruction lights, stand close together 0.2 mile NNW of the same light.

Pamam Light is shown from a black, round concrete tower, red band and stands 18m high on the NW end of a rocky shoal 0.4 mile WSW of Sa Do.

Hangdo, 23m high, with a sparsely-wooded summit, lies 0.2 mile E of **No Mal** (34°55.2'N., 128°04.5'E.). Hangdo Light is shown from a white round concrete tower on the S side of the island.

Coal Pier Light (34°54.2'N., 128°06.6'E.), shown from a red metal tower, stands 4m high at the SE end of Hangdo, off the

deepwater wharf. A lighted beacon marks a drying reef situated 0.2 mile WNW of the breakwater head. The harbor is entered via Samcheonpo Sudo.

Maan Do (34°45'N., 128°05'E.), lying close off the E coast of Namhae Do, has a conspicuous conical summit.

Ch'angson Do (Changseon Do) (34°51'N., 128°02'E.), separated from Namhae Do by the channel Changseon Haehyeob, rises to **Taebangsang** (Daebang San) (34°51'N., 127°59'E.), its summit in the SW part. Ch'angson Haehyop has a depth of 18m in the E entrance, but 1.5 miles within the entrance the channel becomes shallow and is encumbered with rocks and shoals. It is therefore not recommended even for small vessels.

Saryang Do (34°49'N., 128°14'E.) consists of two large islands about 3.75 miles E of Ch'angson Do (Changseon Do). Ha Do (Hado), the SE island of Saryang Do, is 344m high. Sang Do (Sangdo), the NW island, is 398m high.

The summits of both islands consist for the most part of rocky boulders, and the ridges are black and serrated.

Saryang Haehyop, a narrow channel separates **Ha Do** (34°49'N., 128°14'E.) and Sang Do.

Chukto (Jug Do), 48m high, lies about 0.5 mile WSW of the SW extremity of Sang Do.

Suu Do (Suudo) (34°50'N., 128°08'E.), 188m high and rugged, lies 2.5 miles W of the S point of Sang Do.

Nonggaedo (Nong-gae Do), a conical islet 45m high, lies midway between Suu Do and Sang Do.

Samcheonpo Sudo, with a least depth of 7.2m, lies between **Sinsu Do** (34°54'N., 128°05'E.) and the mainland NE. Sinsu Do lies about midway between Ch'angson Do and the mainland. Sa Do, about 0.3 mile N of Sinsu Do, is conspicuous. On the mainland a tower standing on a hill, about 0.5 mile NNW of **Yulpo Mal** (34°53'N., 128°08'E.), is conspicuous when seen from a distance. The channel is spanned by an overhead power cable, with a vertical clearance of 25m.

Shinsu Hang (34°54'N., 128°04'E.), a bay on the W side of Shinsudo is protected by two breakwaters. Lights are shown from the heads of the breakwaters.

Taebang Sudo (34°56'N., 128°02'E.) leads between the mainland and the islands off the NE extremity of Ch'angsondo, and connects Chinju Man with Samch'ongp'o Sudo.

1.32 Chodo (34°56'N., 128°02'E.), 37m high with a wooded summit, is the N island of the group lying off the NE extremity of Ch'angsondo. Chodo Lighted Beacon stands on the S end of the island.

The fairway from Chinju Man leads S of Chodo, and keeps to the mainland side NE of **Mado** (35°56'N., 128°02'E.) before it connects with Samch'ongp'o Sudo.

The direction of buoyage should be observed that leads SE through Taebang Sudo from Chinju Man. A beacon stands in the shoal water 0.7 mile SE of Chodo Lighted Beacon; it marks the fairway. A lighted beacon stands on a drying rock 1.5 miles SE of Chodo Lighted Beacon; N of this rock the fairway narrows to about 0.15 mile wide.

Tides—Currents.—In Samcheonpo Sudo the flood current has a velocity of 2 knots and the ebb current 2.5 knots. In the narrow W part of this channel, the flood current has a velocity of 4.25 knots and the ebb 4.5 knots.

In So Sudo both currents attain a velocity of 5.5 knots in its narrow W part.

In the SE approach and E entrance to Chinju Man, the tidal currents generally set NE on the rising tide and SE on the falling tide. By the shore, the tide turns at about the times of high and low water, with a short interval of slack water. The rate of the current is weak for about 30 minutes before and after low or high water. However, the following maximum rates have been observed:

Location	Speed/Direction
So Sudo	Flood—1.5 knots Ebb—2.3 knots
Samchonpo Sudo	Flood—2 knots Ebb—2.3 knots
Samchonpo Sudo—Narrow part of channel	Flood—4.3 knots Ebb—4.5 knots
Channel W of Nukto (34°55'N., 128°02'E.)	5.5 knots
Taebang Sudo	Flood—5.8 knots Ebb—6.5 knots

Fog appears frequently from May to September with storms occurring most often in August and September.

Anchorage.—Samcheonpo Myoji, between No Mal and Changdung Mal, 0.75 mile ESE, affords good anchorage. The bay is fringed by a bank, with depths of less than 5m, extending 0.4 mile from its head; another bank, with depths of less than 5m, extends about 183m S from No Mal. The best position to anchor is with the S extremity of Hang Do in line with the 26m high hill about 0.2 mile N of No Mal, bearing 318°, in a depth of 9m, sand and mud.

Anchorage No. 1, Anchorage No. 2, and Anchorage No. 3 are located 0.15 mile SE, 0.6 mile S, and 0.35 mile SW respectively, from Hang Do Light.

During W or N winds, vessels can obtain temporary anchorage 0.2 mile SE of **Ch'u Do** (34°55'N., 128°05'E.) in a depth of 13m. However, local knowledge is necessary.

Depths—Limitations.—The deep water wharf has a berthing face 540m long with depths between 13.4 to 16m along-side. There are numerous berths and piers in the NW part of the harbor, in the vicinity of Samch'ongp'o harbor basin.

Signals.—Storm signals are displayed from white metal masts, 12m high, at the N of Shinsu Do, at the N part of Nukto, and on the E shore of Chinju Man, 1.25 miles NNE of Nukto.

T'ongyong Haeman

1.33 T'ongyong Haeman (Tongyeong Heaman)(34°47'N., 128°27'E.) lies between Miruk (Mireug) Do and the mainland on the W, and Hansan Do and Geoje Do (Koje Do), on the E. The bay is approached between **Ogok To** (Ogog Do) (34°44'N., 128°26'E.) and **Pijin Do** (Bijin Do) (34°43'N., 128°28'E.), and extends about 10 miles N to a shallow channel of 2.8m leading into Jinhae Man (Chinhae Man). Chungmu Hang is between the N end of Miruk Do and the mainland.

Off-lying islands.—Oebuji Do (34°42'N., 128°24'E.), on the W side of the approach to T'ongyong Haeman, has a flat summit and cliffy sides. Naebuji Do, about 0.7 mile N of Oebuji Do, has a sharp summit.

Pijin (Bijin) Do on the E side of the approach, consists of two parts joined by a sandy isthmus. Yongcho Do, about 0.6 mile NE of Pijin Do, also consists of two parts connected by a low isthmus, the E part of which is the higher.

Ogok To (Ogog Do), about 1.3 miles W of Pijin Do, lies on the W side of the approach to the bay. **Hangnim Do** (Hagnim Do) (34°45'N., 128°25'E.), 140m high, is divided in two by a narrow, shallow channel. **Yondae Do** (34°44'N., 128°24'E.), with a wooded summit 219m high lies 0.75 mile W of Ogok To (Ogog Do). A light is exhibited approximately 0.5 mile NW of Yondae Do.

Caution.—Two islets, fringed by foul ground, lies on the E side of the channel close off the W coast of Hansan Do. Another small islet, on which a light is exhibited, and a wreck lie about 1.75 miles S and 0.75 mile SSW respectively, of these two islets. About 2 miles farther N of the two islets, two other islets joined by a reef lie close off the NW end of Hansan Do. A light is exhibited on a small islet on the N side of the entrance to Hansan Hang, an inlet on the W side of Hansan Do.

1.34 Hwa Do (34°49'N., 128°28'E.), 0.25 mile N of Hansan Do, is an island 115m high and is fringed by drying and below-water rocks extending about 0.15 mile SW from the SW end. A below-water rock lies 0.2 mile SW of the N extremity of Hwa Do and 183m offshore. A bank, with depths of less than 10m, extends about 0.3 mile W from the island.

Hwa Do is separated from the N end of Hansan Do by Ch'ukp'a Sudo (Chugpa Sudo), and it is free from dangers. Panghwa Do (Banghwa Do), fringed by a reef, lies in the fairway about 0.3 mile NW of Hwa Do. A light is shown from the W extremity of Panghwa Do.

Chungmu (Ch'ungmu) (34°50'N., 128°26'E.) stands on the mainland on the N side of Chungmu Hang. It is the principal fishing harbor in this part of Korea. The harbor affords protection against winds from all directions.

Changso Do, in the middle of the N coast of the bay, is joined to the mainland N by reclaimed land.

Changso Light (34°50.1'N., 128°26.3'E.) is shown from a black, round, concrete tower with a yellow top, stands on the SE end of the peninsula extending 0.5 mile SE from Changso Do.

Ch'ungmu Hang (34°50'N., 128°25'E.), an important commercial and fishing port, is entered N of Jongsong Mal, the NE point of Mirugto (Mireug Do) 31m high and nearly steep-to E. The entrance to the bay is about 1 mile wide indents the coast 2 miles as far as the E entrance of Ch'ungmu Unha.

The port is sheltered from all winds, but the anchorage area is limited to a few vessels.

Pilotage.—Requests for pilot are made through an agent or directed to the harbor administration office. Pilotage is free and there is only one pilot, who boards near **Pigin Do** (34°43'N., 128°28'E.).

Anchorage.—Vessels can obtain anchorage in the E part of the harbor, in 9m, mud and shells. The quarantine anchorage is on the W side of the channel about 1.75 miles SSW of Panghwa Do.

Nam Po (34°49.5'N., 128°29.0'E.) is protected by breakwaters and affords good anchorage for fishing vessels. Lights are shown from the breakwater heads.

1.35 Geoje Do (Koje Do) (34°50'N., 128°40'E.), large and mountainous, forms the W side of Kadok Sudo (Gadeog Sudo) and its approach, and the S sides of Jinhae Man (Chinhae Man). The SW coast of the island is indented by several bays and inlets and is fringed by several islands and islets. Saegam Mal, the E end of the S extremity of Geoje Do (Koje Do), is surmounted by a conical hill. Kao Do, Sobyongdae Do, and Taebyeongdae Do lie within 1.3 miles of the S end of the island.

The SE side of Geoje Do, between Saegam Mal and **Soi Mal** (Seoi Mal) (34°47'N., 128°44'E.), about 6.5 miles NE, is high and bold. The tide rips off this stretch of coast causing the mud in the open bays to be stirred up creating discolored patches of water. Tadae (Dadae) Man, entered N of Saegam Mal, has deep water with good holding ground of mud but is open SE. When there is a swell from NE it sets into the bay.

Tojang P'o (Dojang Po) (34°46'N., 128°41'E.), NE of Tadae (Dadae) Man, has depths of 20 to 27m, mud and sand in its center. Tojang P'o is entered between Kalgot Tu (Galgod Do) and Soi Mal (Seoi Mal), 4 miles NE. A light is shown from Soi Mal. The island Changhuk To (Jungheug Do), rugged with dark steep cliffs, and Naohuk To (Naeheug Do), with two summits, lie on the N side of the entrance of Tojang P'o.

An oil terminal (34°49'N., 128°44'E.), comprising a single buoy mooring from which a light is exhibited, stands 0.5 mile offshore 2 miles N of Soi Mal (Seoi Mal) Light. It is connected to the shore SW by a submarine pipeline. The buoy is capable of handling vessels up to 330m in length, with a draft of 28m. Berthing of tankers takes place in daylight hours only. The maximum size vessel berthed was 250,000 dwt, with a 21m draft.

There is no deballasting facility. The quarantine and holding anchorage lie about 2 miles NNE of the terminal. The pilot boards about 3 miles E of Jisim Do.

A quay, 0.75 mile long constructed on reclaimed land, fronts the shore S of the oil terminal.

The coast from W of the oil terminal to Yangji Am (Yangji-am), 5 miles NNE, is high, bold, and indented.

Chisim Do (Jisim Do) lies about 2 miles NNE of Soi Mal. Two radio towers stand on the summit of the island near its S end.

Chise P'o (Jise Po) (34°50'N., 128°43'E.), entered 3.3 miles N of Soi Mal (Seoi Mal), is 0.2 mile wide at its entrance. This fishing port affords a safe haven, deep and free from dangers. Two silver-colored oil tanks stand on the SW shore of the bay, about 0.8 mile WSW of its S entrance point.

The village Daedong Ri stands at the head of the bay. A pier, 150m long where small vessels can berth alongside, is situated near the village.

Ongnyo Bong (Ognyeo Bong), 554m high, stands 1.5 miles NW of the harbor entrance.

Anchorage.—Anchorage may be obtained in Chise P'o (Jise Po) on the N or S sides of the bay, in 9 to 15m, mud.

1.36 Jangseungpo Hang (34°52'N., 128°44'E.) is a small port used by a large number of fishing vessels. A short breakwater extends from each side of the harbor entrance.

A radio tower, 30m high, stands close NE of the entrance to the port.

On the E side of the head of the harbor there is an embankment, on the SE side of which is a pier 16m long where vessels of 100 tons can berth. Reclamation work was in progress in the area.

Okp'o Do (Ogpo Man)(34°53'N., 128°43'E.) is entered between Yangji Am (Yangji-am) and a point 1.75 miles NW. Yangji Am is a narrow point 47m high with a pinnacle rock 3m high off its extremity. A light is shown from the E side of Yangji Am (Yangji-am). Two breakwaters protect the harbor from the NE.

A shipyard, including large dry docks and shipbuilding and repair facilities, occupies the SW shore of Okp'o Man; there is extensive quaysage and also two floating docks.

The pilot boards in the quarantine anchorage.

Anchorage.—Anchorage may be obtained in the NW corner of the harbor, in depths of 5 to 14m.

There is a small harbor at **Oepo Ri** (34°56'N., 128°43'E.). A light is exhibited from the seaward end of the S of two piers close S of Oepo Ri.

Isu Do (34°58'N., 128°44'E.), 77m high, is located about 1.75 miles N of Oepo Ri. It is flat, bare, and red in color. Rocks, which dry 0.6m, extend 91m S from the SW extremity of Isu Do. A 4m rocky shoal lies 0.18 mile N of the E extremity of the island.

Kyok To (Gyeong Do), 15m high, lies 1 mile NW of Isu Do and 0.6 mile offshore. A spit, with a depth of 0.9m over the outer end, extends 0.2 mile S and SW from the islet. A detached rock, with a depth of 4m, lies about 0.5 mile S and another rock, with a depth of 6.7m, lies 1 mile NE of Kyok To (Gyeong Do).

Kalsan Do (Galsan Do)(34°58'N., 128°46'E.), 1 mile E of Isu Do, consists of 4 rocks from 11 to 19m high. The two S rocks are the highest and are pointed. Paekso Do (Baeg Seo) rock is 15m high and whitish. Rocky ground extends about 183m NW from this rock.

1.37 Gadeog Sudo (Kadok Sudo) (35°00'N., 128°48'E.), the principal approach to Jinhae (Chinhae) Man and Masan, lies between the islets E of the NE extremity of **Geoje Do** (Koj Do) (34°50'N., 128°40'E.) and **Gadeog Do** (Kadok To) (35°00'N., 128°50'E.). This passage leads NW into Budo Sudo (Pudo Sudo), and then into Jinhae Hang and Masan Hang.

Tides—Currents.—In Gadeog Sudo, the set is NW on the rising tide at a maximum rate of about 2 knots and SE on the falling tide at a maximum rate of about 2.3 knots.

Tongdumal (Dongdumal) (34°59'N., 128°50'E.), the S point of Gadeog Do, is almost steep-to. Tongdumal Light is shown from a brick tower on a dwelling, 9m high, stands on the point; a fog signal is sounded from the light.

A surveillance radar is mounted on a white building near the light.

Caution.—A dangerous wreck lies about 1 mile SE of the light.

1.38 Cheonseong Man (35°01'N., 128°49'E.) is the only bay on the W coast of Gadeog Do to afford any protection from S. A fishing village is located at the head of the bay. Cheonsutae Mal is the S point of the entrance to the bay, where a breakwater projects ENE from the N side of it.

Anchorage.—Small local vessels with a draft not exceeding 5m anchor in Cheonseong Man. The best anchorage is with Cheonsutae Mal in line with the SE extremity of Daejug Do, bearing 242°, in a depth of 5.9m, mud bottom. Anchorage is prohibited in Gadeog Sudo S of Cheonsutae Mal.

A fish haven has been established about 1 mile E of the quarantine anchorage.

Regulations.—A traffic separation scheme (TSS) is established that leads through Gadeog Sudo, then NW through Budo Sudo, W through Chinhae Man, SW into Gohyeonseong Man and NNE into Haengam Man. Vessels are recommended to follow the lanes as shown on the chart, and within the indicated sections of the TSS a speed limit of 15 knots is required. The sections where the speed restriction is applied are within an arc of 1.2 miles NE of **Byeongsan Yeoldo** (35°01'N., 128°46'E.); in the vicinity of the junction close N of Jam Do; in the section between Gwangji Mal and Deogwan Mal; and close NE of Baeg Am.

The pilot boards about 1.5 miles S of the E entrance of the TSS.

Caution.—A restricted area prohibiting fishing and anchoring extends across the main channel over a width of 4 miles from Geoje Do (Kojedo) to Gadeog Do (Kadokto).

1.39 Namhyongje Do (Namhyeongje Do) (34°53'N., 128°57'E.), about 8.5 miles SE of Gadeog Do (Kadok To), is the S of three groups of islets and rocks lying in the approaches of both Gadeog (Kadok) Sudo and Pusan. Namhyongje Do, marked by a light on its E side, is very rugged, with steep sides and a wooded summit. A reef extends a short distance N from Namhyongje Do and a 10.8m patch lies 0.4 mile NNE of the island, with a 16m patch about 0.7 mile farther NNE. An ammunition dumping ground lies centered 1 mile NW of Namhyeongje Do.

Bughyeongje Do (Pukhyongje Do), about 3 miles NNE of Namhyongje Do, consists of five above water rocks which appear as two islets from a distance. A rock, 3.5m high, lies detached from the main group a short distance SW. Bunghyeongje Do, an island 60m high, with several above water rocks on the reef extending NE and E of the island. A detached rocky patch, 5.4m high, lies 0.3 miles NW of the island.

Mok To (Mog Do) (34°59'N., 129°00'E.), 3 miles NNE of Pukhyongje Do (Bughyeongje Do), is an island 60m high with several above water rocks on the reef extending NE and E of it. A detached 5.4m rocky patch lies about 0.35 mile NW of the island. A light is shown from Mok To; a racon is located at the light.

Dangerous wrecks lie about 9.5 miles and 10.3 miles NW of Namhyongje Do.

Gadeog Do (Kadok To), rugged and irregular, rises to Yeondae San, 459m high, 2.3 miles N of its S point. On the S side of the summit of Yeondae San there is a large prominent boulder. The N coast of the island is high, precipitous, and barren.

Byeongsan Yeoldo (Pyongsan Yolto), forming the W side of the recommended channel through Gadeog Sudo (Kadok Sudo), consists of three conical islets about 183m apart and fringed by foul ground. A rock, 15.9m high, and a drying reef lie about 0.3 mile SE of K'undae So, the easternmost islet of the group.

Jeo Do (35°01'N., 128°45'E.) is a wooded islet with cliffy sides. Near its SE end stands a conical summit 88m high. The

NW side of the island is cultivated and terminates in a shingle beach on which is a village. A jetty projects 45m from the N side of Jeo Do near its NW end.

A rock, with a depth of 5.4m, lies about 0.3 mile ESE of the SE extremity of Jeo Do.

Sakunso Seo (Saegeun Seo)(35°02'N., 128°44'E.), 0.5 mile NNW of Jeo Do, is a group of rocks, above and below-water. The highest rock, 4m high, stands in the middle of the group. A light is exhibited on Saegeun Seo.

Mangwa Do (35°02'N., 128°43'E.), 58m high, lies about 0.8 miles WNW of Sakunso Seo. It has a conical appearance when seen from SE or NW.

1.40 Chinhae Man (Jinhae Man)(35°00'N., 128°34'E.) is a large landlocked bay formed by the NW side of Geoje Do (Koje Do) and the mainland. The bay, which has moderate depths, is entered from E through the deep passages on either side of **Jam Do** (35°03'N., 128°40'E.), which lies 1 mile N of the N extremity of Geoje Do.

The route through Jinhae Man, SW of Jam Do, is marked by lighted buoys.

Baeg Am (Paek-am) (35°02'N., 128°38'E.), a rock 2m high, lies 2 miles SW of Jam Do.

Heug Am (Huk-am), drying 1.5m, lies about 1 mile W of Baeg Am. It is marked by a light.

Chilcheon Do, on the E side of the bay, is separated from the NW side of Geoje Do by the narrow Chilcheon Sudo. This fairway has a least depth of 8.5m and is spanned by a new bridge (2001), with a vertical clearance of 15m and a maximum width of 11m. The overhead power lines have been incorporated into the Chilcheon Bridge.

Hwangdeog Do (Hwangdok To) is an islet lying close off the NW side of Chilcheon Do. A light is shown from Hwangdeog Do (Hwangdok To).

A wreck, with a depth of 13.1m, lies in the N traffic lane a little over 0.75 mile SW of Hwangdeog Do.

Gajo Do (Kajo Do)(34°58'N., 128°32'E.), the largest island in the S part of Jinhae Man, consists of two hilly sections joined by a narrow neck of land. Ognyeo Bong (Ongnyo-bong), the summit of the N section, has a conical appearance when seen from the E entrance of the bay.

Chwi Do, 9m high, lies about 0.6 mile NE of the NE side of Gajo Do. A black round concrete beacon on the summit of Chwi Do forms a good landmark.

1.41 Budo Sudo (Pudo Sudo)(35°05'N., 128°39'E.), the N continuation of Gadeog Sudo (Kadok Sudo) is entered between Jam Do and **Ung Do** (35°04'N., 128°43'E.) about 1.75 miles ENE. Jinhae Hang lies at its N end, and the port of Masan at its NW end, about 9 miles NNW of Jam Do. There are general depths of 9 to 18m S of Masan, with most of this area having been swept to depths of 8.5 to 10m. Both sides of the strait are mountainous, with barren ridges, and are indented by several small bays.

Jam Do (35°03'N., 128°40'E.), about 1 mile N of the N end of Geoje Do, lies on the W side of the entrance of Budo Sudo. It also lies at the entrance of Jinhae Man. Tide rips are off the S

side of the island. A storm signal station is on the E extremity of the island.

Chori Do, on the E side of the entrance of Budo Sudo, has steep sides and a rounded summit depressed in the middle.

Channel Cho, 0.75 mile W of Chori Do, lies on the N side of Budo Sudo; at low water the sea breaks over two rocky heads which dry. Channel Cho Lighted Beacon, 12m high, stands on Channel Cho.

Kureisser Cho (K'uresa Ch'o) (35°05'N., 128°38'E.), on the SW side of the fairway, lies about 1.75 miles W of Channel Cho. It has a least depth of 4.7m, and is marked on its NW side by a lighted buoy.

Bu Do (35°06'N., 128°39'E.), the largest island in Budo Sudo, lies about 2.3 miles N of Jam Do. The island appears darker in color than the neighboring hills and islets and has a few clumps of trees. On the W tip of the island is a degaussing station. Hwa Do, 35m high and bare with a flat summit, lies 0.5 mile ENE of the S end of Bu Do. Dotumari Am, about 0.3 mile E of Hwa Do, is a reef on which there are two rocks 9m high. Totumariam Lighted Beacon stands on the E end of the reef.

Nam Do and Song Do lie on the NE side of the fairway about 2 miles NW of Bu Do.

Anchorage.—Vessels may obtain anchorage, sheltered from seaward, in 9.1m, mud, N of the W end of Chori Do. A quarantine anchorage is located S of Chori Do. It is centered in position 35°04'N 128°42'E.



Jinhae

1.42 Jinhae Hang (35°08'N., 128°39'E.) is entered between Daeyul Do and Somo Do, 2.5 miles NW. This is a prohibited area as indicated on the chart. A channel leading to Jinhae Hang, passing W of Bu Do, has been swept to a depth of 9.4m.

Jinhae (Chinhae) (35°09'N., 128°40'E.), standing at the head of the promontory separating Haengam Man and Jinhae Hang, is the site of the Republic of Korea's principal naval base. Vessels drawing up to 7.9m can be accommodated.

Pilotage.—Pilotage is not compulsory but recommended. Korean naval officers act as pilots on request.

Anchorage.—Designated numbered anchorage berths are assigned in an area N and W of Bu Do, in 10 to 16m. The N

anchor berth is for vessels in quarantine. Mooring buoys in the harbor are normally used only by Korean naval vessels.

Haengam Man (35°08'N., 128°41'E.), NE of Bu Do, is a commercial harbor entered between Daeyul Do, the NW entrance point, and the promontory about 1.3 miles ESE. Madang Seo, which dries, lies near the middle of the entrance of the bay. A light is exhibited on Madang Seo. Daeyul Do and Soyul Do, on the W side of the entrance of the bay, are joined by a reef with the mainland.

Daejug Do (Taejuk To) (35°08'N., 128°41'E.), with a drying rock N, lies off the W side of the bay, and Sojug Do lies a little over 0.5 mile farther NE.

A buoyed channel leads from E of Madang Seo to the facilities about 1.5 miles NE. The berth, about 201m long, can accommodate vessels with a draft of 10.4m.

A pier, with a dolphin close off its head, extends about 0.15 mile SW from Daeil Mal, the SE entrance point.

There is a depth of 11m alongside the NW side of the pier where vessels of 20,000 tons can berth. A storm signal station is on the SE side of the bay, about 1.3 miles NE of Madang Seo.



Masan Hang

Masan (35°11'N., 128°34'E.)

World Port Index No. 60380

1.43 Masan, on the W side of Masan Hang, an extension of Budo Sudo, is entered between the SW extremity of Somo Do and a point 0.5 mile SW. The channel is deep and free from dangers in the fairway. Somo Do, 127m high, is connected to the mainland by a causeway; a number of oil tanks stand in the middle of the island. Makkae Do, a black rock, lies on the W side of the fairway about 0.35 mile W of Somo Do. A light is exhibited on Makkae Do.

Cho Do (Jeo Do), the barren islet close within the S limit of the harbor, can be passed on either side.

A small harbor, fronting the old town, is protected by a detached breakwater with lights on each end.

Winds—Weather.—The weather in Masan Hang is not extreme and is not affected by the NW seasonal winds in winter. In summer, typhoon precautions may be necessary. Rain occurs most frequently in the months of June, July, and August with an annual rainfall of 245cm, but in winter there is only 30cm. Fog is fairly frequent in March and April but rare in August and September.

Tides—Currents.—Currents in the harbor run SE at up to 0.5 knot on the ebb and run NE at up to 1 knot on the flood. Velocities in the lower harbor may reach 2 knots on the ebb.

Depths—Limitations.—Masan Hang is an excellent natural harbor which is almost completely sheltered. The bay is narrow and long with widths ranging from less than 1 to 2 miles. The harbor is open to the S and three sides surrounded by mountains.

The channel to the main deep water berth has a least charted depth of 9.8m; however, vessels drawing more than 6.5m should approach No. Pier 1 with caution.

Pier	Depth	Length	Vessel size (tons)	No. of berths
No. 1	8m	445m	8,000	4
No. 2	5m	385m	500	2
No. 3	11m	420m	20,000	1
No. 4	11m	1,050m	20,000	5
Dolphins	7m	88m	5,000	1
Center Pier	3m	400m	—	—
KHIK	11m	240m	20,000	1
Yukong	7m	100m	20,000	1

Development and reclamation works were in progress in the bay SSW of Isim Mal; in the SW corner of Masan Hang, 1.5 miles S of Cho Do; and in the harbor fronting the old town.

No. 1 Pier and No. 2 Pier serve the Free Port Zone. There are oil product pipelines at No. 2 Pier. A conveyor belt at No. 3 Pier has a 500 tons/hour working capacity.

A submarine pipeline crosses the channel between the W end of Cho Do and the mainland. An overhead cable, with a clearance of 58m, crosses the channel in the same area between pylons displaying red obstruction lights.

Aspect.—Reclamation works are in progress in the harbor area fronting the old town 1.3 miles N of Cho Do and in the bay 1.5 miles S of Cho Do. Landmarks include a silvery radio tower, marked by an obstruction light standing on Isim Mal. A group of three chimneys stands 0.3 mile W and a group of 3 oil tanks 0.75 mile WNW of Isim Mal.

Pilotage.—Pilotage is compulsory. There are seven pilotage boarding positions they are best seen on the chart.

Requests for pilotage should be made to Masan Regional Harbor Administration Office giving 24 hours notice.

Anchorage.—Nine numbered anchorage berths, with depths of 6.4 to 13.9m, are situated in Masan Hang. Three numbered anchorage berths lie NE of the entrance channel.

The coast between Morun Mal and Danggang Mal is indented by Tadaep'o and Kamnaep'o, both opening to the S.

Vessels up to 7.3m draft can take an anchor berth. Quarantine anchorage is established 0.5 mile S of Joe Doi, in a depth of 11m, mud bottom with good holding ground. It also serves as a working anchorage.

1.44 Sodo (Seo Do) (35°01'N., 128°59'E.), 93m high, 0.4 mile SE of Morun Mal is steep at the S end; several rocks, the largest being 20m high, lie within 0.2 mile of its NE and W sides. Sodo Light, from which a racon transmits, stands on a 9m high concrete tower.

A fishing reef is situated between 0.2 mile S and 0.3 mile WSW of the S point of Sodo.

Kyongdo, a rocky islet 30m high, lies 0.5 mile NE of Sodo. A spit, with depths of less than 5m and drying rocks on it, extends 0.2 mile from N end of the islet. A light is shown from a 10m high concrete tower on Kyongdo.

Tadaep'o, on the NE side of Morun Mal, affords good sheltered anchorage to small local vessels, in depths of 2m to 11m, but it is exposed to S winds and waves.



Tadaep'o

The anchorage is used by fishermen as a place of refuge. A breakwater, 150m long, fronts the head of the bay. Extensive reclamation works have been in progress.

Tadae Ri stands close WSW of this breakwater.

Songdo, 61m high, is a peninsula which lies on the W side of the entrance to Tadaep'o with a timber pond between it and the W side of the bay. The saw mill, protected by the breakwater, lies close S of the timber pond.

1.45 Nagdong Po (Naktong P'o) (35°03'N., 128°54'E.), E of Gadeog Do, is shoal. A spoil ground, marked by lighted buoys, lies centered off the mouth of Naktong P'o (Nagdong Po), 2 miles WSW of **Morun Mal** (35°02'N., 128°58'E.).

Nagdong Gang is about 170 miles long and discharges into Nagdong Po through several channels, in which there are some low islets. Some islets are covered with clusters of reeds and others, wooded and cultivated. A least depth of 0.9m exist on the bar, and within the bar for a distance of 11 miles there are even lesser depths.

Anchorage.—Nagdong Po is open to S and SE winds but vessels can obtain anchorage, in a depth of 12m, on the E side of Gadeog Do. Vessels should not proceed into a depth of less than 9m as the sandbanks obstruct the head of Nagdong Po.

Caution.—Depths in Nagdong Po are continually changing and charted soundings should not be relied on.

Nagdong Gang appears to be navigable by small craft for about 100 miles. Motor boats of 4 to 5 tons are able to proceed 15 miles up the river.

Two silos stand on reclaimed land in the area. Reclamation work and quay constructions are in progress.

1.46 Kamnaep'o (Kamch'on) (Gamcheon) (35°03'N., 129°00'E.), E of Tadaep'o, is separated from it by Tusongsan peninsula 95m high, the S end of which is Jadam Mal. The entrance to Kamnaep'o is protected by breakwaters. A light is shown from the head of each breakwater. Kamnaep'o is a small bay which forms a narrow and long indentation between Jadam Mal and Tanggang Mal. The harbor is open to the S. It is surrounded by high mountains on the mainland, which makes it a good anchorage for avoiding winds and waves except from the S.

Kamnaep'o has been subject to extensive land reclamation and development work which extends from the breakwaters to the head of the inlet and lines the harbor, with quays having depths of 1.8 to 14.3m alongside. A Traffic Separation Scheme leads into the harbor.

A lighted range marks the inbound lane of the Traffic Separation Scheme.

Tanggang Mal (Danggang Mal)(35°03'N., 129°01'E.), the E entrance point of Kamnaep'o, is also the W entrance to Pusan (Busan) South Outer Harbor. A breakwater extends about 0.2 mile WSW from the W side of Tanggang (Danggang) Mal.

Du Do (35°03'N., 129°01'E.), an islet 57m high, lies about 0.15 mile S of Danggang Mal. A light 8m high situated S of the summit of the islet. Fairway No. 3 leads W of Du Do from Pusan South Outer Harbor to the entrance of Kamnaep'o.

Depths—Limitations.—A jetty 61m long lies in a cove, dredged to 6.1 to 7.9m, at the NE end of Kamnaep'o. It is protected by a breakwater S of it which projects NW from the S side of the cove. A pier, 520m long, 0.3 mile WNW of the jetty fronts a power station. Land has been reclaimed in both the NW and NE corners of Kamnaep'o. Further land reclamation was in progress at the NW end of the bay.



Gamcheon

Two T-head piers, 70m long, are situated on the E side of Kamnaep'o 0.35 mile S of the dredged cove; vessels of 10,000 tons can berth alongside.

The bottom is muddy and the depths are 7 to 17m.

Pusan (Busan) (35°06'N., 129°02'E.)

World Port Index No. 60390

1.47 Pusan, one of the principal ports in Korea, extends along the W and N shores of the harbor. The port has undergone considerable development (1994) and has a capacity of 2.5 million teu. Further expansion is underway and will provide addition berthing and cargo handling facilities. Reclamation and harbor engineering projects may be encountered when approaching the harbors that comprise the port. Pusan Hang, well protected and available for large vessels, is divided by Yongdo into a N and S harbor. Both harbors are divided into outer harbors and inner harbors, with the latter being protected by breakwaters. The North Harbor is for ocean vessels, while South Harbor is used primarily by coastal vessels.

The North Outer Harbor is entered between Sangi Mal and Seungdu (Sungdu) Mal, about 2.75 miles NNE. The former, the E extremity of Yongdo, is a bold precipitous headland, and the latter can be identified by Oryug Do (Oryuk To), a group of four islets lying within 0.5 mile S of the point. A light is exhibited on the SE end of Yongdo, about 0.5 mile SSW of Sangi Mal, the E extremity of the island. A DGPS station and ramark are situated on the S islet of Oryuk To. Cho Do, on the SW side of North Outer Harbor, is faced with cliffs on its E and N sides.

A new container terminal construction is completed in the NW part of the North Outer Harbor. Further expansion of container facilities to accommodate vessels up to 55,000 dwt..

The South Inner Harbor lies between the mainland and the NW end of Yongdo. It has depths of 4 to 9m in the bay and is not suitable for large vessels. The Inner harbor is protected from the S by two breakwaters. The W breakwater extends 400m E from the W shore, and the E breakwater extends 140m SW from Yongdo.

A detached breakwater extends 270m NNE-SSW in the NW corner of the harbor. The S limit of South Inner Harbor is a line drawn E from a point 0.3 mile NNE of Songdo. The N limit is the drawbridge 1.3 miles NNE of Songdo.

South Outer Harbor is entered between **Dangang Mal** (35°03'N., 129°01'E.) and Seangdo, 4 miles ESE. Depths in the main approach to South Outer Harbor decrease gradually from 30m to about 10m N of **Songdo** (35°04'N., 129°01'E.).

Winds—Weather

Pusan is protected from the cold NW winds of winter by high mountain ranges and gets the full advantage of the warm winds coming from the sea, S and E winds during the summer.

From October to May, NW winds prevail and from June to July SE winds prevail. During August and September, NE winds are predominant.

With winds from E and S, heavy seas may run in the outer harbors, but the inner harbor is afforded some protection by the breakwaters at the entrances.

Although within the typhoon belt, the port is affected no more than approximately twice a year by winds on the fringe of typhoon storms.

Fog may occur from mid-May to mid-June but is rarely thick or of long duration. Fog with visibility of 500m or less occurs about 3 times a year and each may last about 3 hours. Radar assistance is available in conditions of limited or reduced visibility through harbor control.

Tides—Currents

In the area of the Korea Strait about 10 miles off Pusan, the surface current flows in a general NE direction at a velocity which is constantly changing but usually somewhat exceeds 1 knot. The combined flow of the current and tidal currents reaches its maximum velocity about 3 hours after the time of high water at Pusan, and its weakest about 3 hours after low water. A SW set may be experienced when the ocean current is weak.

In the vicinity of Saeng Do, about 0.75 mile S of the S end of Yongdo, the tidal currents are very strong. The flood current

attains its maximum velocity E of **Sangi Mal** (35°03'N., 129°06'E.), and the ebb current between Saeng Do and Yongdo; the tidal currents have a velocity of 2.5 knots in this vicinity, and there are often overfalls during the ebb current.

At the approach to the entrance of Pusan Hang the tidal currents usually set SW with the rising tide, and NE with the falling tide. Within the harbor the maximum velocity of the tidal currents is about 2 knots, and it sets in the same directions as in the approach.

In the approach to the S entrance of Pusan Hang the tidal currents set in a N direction with the rising tide, passing around the NW end of Yongdo. Here the current unites with the flood currently flowing in a SW direction from the N entrance. Together they flow in a W and S direction along the mainland and out to the open sea. A part of the N current strikes the SW coast of Yongdo and is deflected E and S. Then it joins the main current setting S along the mainland to the open sea.

In North Inner Harbor, the tidal currents set SW through Pusan Hang, with the rising tide, and NE with the falling tide. The maximum rate is 2.3 knots. Strong currents at their maximum rate are reported to set through the entrance between the breakwaters.

Depths—Limitations

The depths in the approach to Pusan are deep and clear off the entrance of both the North Outer Harbor and South Outer Harbor. The depths decrease as the inner harbor is approached with a depth of 13.5m between the breakwaters. Depths in the navigable part of North Inner Harbor range from 5 to 10.4m.

The deepwater piers lie on the NW side of North Inner Harbor, with alongside depths of 7 to 13m. Illuminated signs, showing numbers 1-5, lie on each of the five pierheads.

Pier No. 1 is for general cargo and steel, with depths of 8 to 9m alongside.

Pier No. 2 handles the same cargo plus raw sugar, with depths alongside of 9 to 11m. Continuing NNE, Central Wharf extends about 646m up to Pier No. 3, and handles heavy cargo.

Pier No. 3 is for general cargo, container, steel, and lumber, with a 10m depth alongside.

Pier No. 4 handles the same cargo plus bulk cement, with depths alongside of 8 to 10m.

Pier No. 5 extends into Pier No. 6, with a collective length of 1,220m and alongside depths of 12.1 to 13.3m. Pier No. 5 handles grain and containers, while Pier No. 6 handles containers.

Pier No. 7 is situated on the NE side of the harbor, and used exclusively for the handling and storage of coal, scrap, ores, and minerals. Depths alongside range from 9.9 to 12.5m. An obstruction 10.2m lies close NE of the pier. Pier No. 8 close SE of Pier No. 7 is 1,000m in length, with depths alongside of 6 to 10m. It is used for handling of special cargo.

Tankers berth at a T-head oil pier on the SE side of the North Harbor. The depth alongside is 9.7m.

Aspect

The country in the vicinity of Pusan is almost devoid of trees, except for Yongdo and the city itself. The hills, which in

general parallel the coast, are covered to their summits by a rank growth of grass. In autumn and winter this grass takes on a brownish, barren appearance with outcroppings of rock. Cultivated areas lie in the valleys, between the spurs running down to the shore.

The principal peaks near the coast are **Kudok San** (35°07'N., 129°00'E.), about 2.8 miles NW of Yongdo; Kumyor (Gumyeon San) with two summits, the higher reaching an elevation of 428m about 5 miles NE of Kudok San; and Chang San (Jang San), lying about 4 miles farther NE of Kumyor (Gumyeon San), 634m high.

Yongdo, which separates the N harbor from the S harbor, rises to Bongrae San (Pongrae San), its summit in its N part at 395m. The hills slope down to its N and NE shores; the SW coast consists of steep cliffs. The reclaimed land on the NE side of Yongdo is fronted by the coastal bank, which at the N end is encumbered with rocks. Several radio masts and towers stand on the island.

The South Outer Harbor is entered between **Tanggang Mal** (35°03'N., 129°01'E.) and the conspicuous Saeng Do, about 4 miles ESE. A wreck, dangerous to navigation, lies on the E side of the fairway leading into South Harbor, 183m S of the head of the E breakwater.

Pusan Tower, a large white tower with a pagoda-like top, standing close W of the Yunan Ferry Terminal, stands out very well; at night it is lit until about 2330.

Pilotage

Pilotage is compulsory. Pilots board vessels at the seaward end of **Passage I** (35°04.0'N., 129°08.9'E.). Vessels over 7m draft are to anchor 1 mile NE of **Chodo** (35°04'N., 129°06'E.) while waiting for the pilot. There are three pilot vessels and 15 pilots providing day and night service. It has been reported that the pilot will only bring ships into/out of harbor at night time in emergencies.

Requests for pilots and vessel's ETA are sent 72 hours and 24 hours in advance, and VHF contact with Pusan Port Control must be established 3 hours prior to arrival on VHF channel 12.

Regulations

Speed in the fairway of the North Outer Harbor and in North Inner Harbor is restricted to 10 knots in depths over 18m and to 5 knots in shallower depths.

Entry to North Inner Harbor may also be made from South Inner Harbor but this is regulated by the height for Pusan Bridge and the opening of the drawbridge close W of it. The bridge has conclusive times of the day when it is open, and when under certain weather conditions it is closed.

Designated Areas, best seen on the chart, have been established in the approaches to Pusan.

Vessels over 200m long, deep draft vessels, tug boats, and vessels carrying dangerous cargo are requested to inform the District Maritime and Port Authority of the vessel's name, gross tonnage, and scheduled time to enter the Designated Area at least 12 hours prior to entering the Designated Area.



Pusan Hang

Anchorage

Quarantine Anchorage is centered in position 35°05'N, 129°07'15"E, in North Outer Harbor.

Anchorage is available in both North Outer Harbor and Inner Harbor. In the outer harbor, the bottom has some rocky patches, but otherwise there is good holding ground of mud. Good shelter can be obtained in North Inner Harbor during all seasons of the year, in depths of 7 to 15m.

There are four anchorage areas in addition to the quarantine anchorage in Pusan Hang. The designated anchorages are E, O, M, and A. Anchor Berths E-1 to E-6 are located in the SW

portion of Section I and are for general cargo vessels of 500 to 20,000 grt. Anchorage O-2, located SE of Nahang South Breakwater, is a temporary anchorage for vessels less than 3,000 grt. Anchor Berths M-7 to M-11, for timber vessels of over 10,000 grt, lie S of the fairway leading to the inner harbor. Anchor Berths A-4 to A-6, for vessels up to 50,000 grt, are located NW of Oryukto Breakwater.

Caution

A Designated Area is established in the approaches to Pusan, seaward of the SE harbor limit, within the area of 6 miles



Pusan—North Harbor Terminals

radius, centered on a position 0.2 mile SE of the SW end of Oryukto breakwater.

Anchoring and fishing is prohibited within the approaches to North Outer Harbor extending E to meridian 129°12'E, as seen on the chart.

A Traffic Separation Scheme has been established in the approaches to Pusan Harbor. The scheme is not IMO-adopted; it is, however, implemented by the local authorities where Rule 10 of 72 COLREGS apply.

A Port Traffic Management Service Reporting Line has been established joining the following positions:

- a. 35°01.7'N, 128°58.1'E.
- b. 35°58.6'N, 128°59.5'E.
- c. 35°00.0'N, 129°10.0'E
- d. 35°05.0'N, 129°15.0'E.
- e. 35°09.0'N, 129°09.5'E.

Annually fishing nets are laid on either side of the fairway through North Outer Harbor from September to March. They are also laid over most of the head of the N part of North Inner Harbor. The limits of these nets may be extended and caution is necessary, especially at night.